COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien

MINUTES OF THE 36TH ANNUAL MEETING

1991-NOVEMBER-28

The 36th annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was held on Thursday, November 28, 1991 in Room 449, Galbraith Building of the University of Toronto, 35 St. George Street, Toronto, Ontario.

1. Call-to-Order:

The meeting was called to order at 9:35am by A.R. Robertson, President. Sixteen members, advisory members, and interested people were in attendance (Appendix A). Regrets were received from W.K. Adrian, A. Bichon, B. Jordan, S.M. McFadden, T. Nilsson, and D.K. Tiller.

Moved by A. Ketvirtis, seconded by J. Roberge, that the agenda be accepted as circulated prior to the meeting. Passed.

2. Minutes of the 35th Annual CNC/CIE Meeting:

Moved by M.G. Bassett, seconded by P.K. Kaiser, that the minutes of the 35th annual CNC/CIE meeting be accepted as circulated (mailing of 1991-January-28). Passed. There were no matters arising.

3. President's Report:

A.R. Robertson presented his President's report, enclosed as Appendix B (a copy of the NRC Council's motion is also included). Discussion followed, particularly concerning several items in the report of the Executive Committee meeting: the method of determining technical committee membership, and the new ISO-CIE agreement. It was decided that a copy of the CIE Council Resolution on Joint ISO-CIE Standards should be circulated to the members.

Moved by M.G. Bassett, seconded by A. Ketvirtis that the President's report be accepted. Passed.

4. Secretary's Report:

A.A. Gaertner presented his Secretary's report, enclosed as Appendix C. The Membership/Mailing List section was deferred until the Nominations and Appointments item on the agenda (item 7 below). Moved by P.K. Kaiser, seconded by I.C. Pasini, that the Secretary's report be accepted. Passed.

5. Treasurer's Report:

B.W. Tansley reported (Appendix D) that his treasurer's report had not been prepared. He would prefer to present it at the end of December, when his report to Carleton University is due. Since the CNC/CIE financial year ends the 30th September, as decided by the 34th annual meeting of the CNC/CIE, this caused some discussion concerning the problems of preparing a report at this time, which

led to a discussion of the problems of a volunteer group maintaining the 'sales office' for CIE publications in Canada. The basis of some of these problems are presented in B.W. Tansley's *Annual Activity Report: Canadian Publication Sales*, also given in Appendix D. The committee divided and discussed these problems under the two following issues:

1. Canadian distributor of CIE Publications: It was moved by J. Roberge, seconded by J.C. Zwinkels, that the CNC/CIE appoint 1 or 2 people to determine how best to distribute CIE Publications in Canada, without cost to the CNC/CIE. A report is due 1992-January-31; to be sent to the secretary, who is to distribute it to the members and advisory members. Passed. The discussion concerning this motion pointed out several questions which need to be considered:

a. What should be done with the approximately $14,000 inventory which B.W. Tansley indicated that we now have on consignment from the Central Bureau? Should this be sent back to the Central Bureau, bought, or partially bought?

b. Is it possible to have a distributor in Canada? Could we use the Central Bureau or some other country's (eg.USA) distributor? If we do have a distributor in Canada, what amount of accountability to the CNC/CIE do we expect from the distributor? How can the CNC/CIE keep in contact with any system which is set up?

Several suggestions were given by members of the committee:

a. The committee agreed that it was desirable to have a distributor in Canada.

b. R.W. White suggested Standards Council of Canada.

c. J. Frank Lin offered the services of Lighting Sciences Canada as distributor.

d. We should request that any distributor present an annual activity report to the CNC/CIE.

The committee appointed I.C. Pasini, with assistance from B.W. Tansley who will need to supply data to any potential bidder concerning our past sales, to act on the above motion.

E. Wotton raised the question as to how can an individual review the CIE Publications without buying them sight-unseen? Several members indicated that they were available on loan from several libraries such as at the University of Toronto, or CISTI at NRC.

2. Treasurer's Report: the committee requested a written report by 1991-December-31, and B.W. Tansley indicated that he would provide one for distribution at that time.

A.R. Robertson commended B.W. Tansley for his efforts in advertising and distributing the CIE publications, noting that his work had resulted in Canadian sales ranking 4th amongst the CIE member nations for 1990.

6. Reports From Division Members:

DIVISION 7: General Aspects of Lighting, R.W. White

R.W. White presented his report, enclosed as Appendix E. He invited interested people to participate in any of the technical committees. J. Frank Lin offered to work on TC's 7-03 and 7-08. M.G. Bassett presented a short verbal report from the Div^n 7 meetings she attended at the Melbourne Session. A. Ketvirtis mentioned that the Transportation Research Board was planning to prepare educational tapes for distribution. He volunteered to send the Secretary information concerning them which could be circulated to the membership.

DIVISION 6: Photobiology and Photochemistry

There was no report since we do not have a Canadian member for this division. A.R. Robertson summarised the activities of this division as presented in the Executive Committee report at the Melbourne meeting. A copy is enclosed as Appendix F. M.G. Bassett presented a verbal report from the Div^n 6 meetings she attended at the Melbourne session. There appears to be a significant gap between the scientists working in this field and designers/users of equipment used in this field.

A.R. Robertson reported that his attempts to find a division member from Health and Welfare were not successful. He proposed appointing a lighting expert, rather than a photobiologist or photochemist. He suggested E. Wotton as the Canadian member, seconded by B.W. Tansley. E. Wotton accepted, and

his nomination was passed by the committee.

DIVISION 5: Exterior and Other Lighting Applications, J. Roberge

J. Roberge presented his report, based on the Minutes of the Division 5 meeting in Melbourne. He promised to send the Secretary the division quadrennial report, to be enclosed as Appendix G with these minutes.

DIVISION 4: Lighting and Signalling for Transport, B.W. Tansley

B.W. Tansley presented his report, extracts from which are enclosed as Appendix H.

DIVISION 3: Interior Environment and Lighting Design, I.C. Pasini

I.C. Pasini presented his report, extracts from which are enclosed as Appendix I. J. B. McArthur commented on the Canadian participation in TC 3-07 and 3-25. He also wondered why the publication of the technical committee (TC 3-07) which defines the procedures was not available for use in the technical committee (TC 3-25) which was starting measurements.

DIVISION 2: Physical Measurement of Light and Radiation, A.R. Robertson

A.R. Robertson presented his report, enclosed as Appendix J. He also indicated that he wished to resign as the Div^n 2 member. He suggested J.C. Zwinkels of NRC as his successor. Her nomination was seconded by J. Roberge, and passed by the committee.

DIVISION 1: Vision and Colour, P.K. Kaiser

P.K. Kaiser presented his report, enclosed as Appendix K. R.Gibbons brought the comments of W.K. Adrian, who was unable to attend. A.R. Robertson reported verbally on some of the Div^n 1 meetings which he attended at the Melbourne session. A discussion of some of the TC's followed.

A.R. Robertson thanked all the Division members for attending, and having their reports available at this meeting.

Due to the necessity for some of the members to depart before the end of the allotted meeting time, the committee agreed to a change in the order of some of the remaining items on the agenda.

7. Nominations and Appointments:

The items presented in the Secretary's report under Membership/Mailing List were considered. The four Advisory Members who had not replied to the President's questionnaire concerning their interest in the CNC/CIE, together with P. Young who has left the country, were removed from Advisory Member status. The six people whose mail has been returned, together with M. Discutneau, were also removed from the mailing list.

Advisory Members:

The following seven people were nominated and accepted as Advisory Members:

Ronald Gibbons	University of Waterloo
Roy Kaufmann	Defense and Civil Institute of Environmental Medicine
Barbara Kolesnik	UMA Engineering Ltd.
Jacques Lacasse	Luxtec Ltée
R. Lakowski	University of British Columbia
K. Frank Lin	Lighting Sciences Canada Ltd.
J. Love	University of Calgary

Members:

The president presented a list (Appendix L) of our present members and the expiry date for their term in office. He read the guidelines for membership in the CNC/CIE as given by the NRC International Affairs office and explained the difference between Members and Advisory Members (mainly that only members get financial travel assistance).

The terms of M.G. Bassett, P.K. Kaiser, I.C. Pasini, J. Roberge, A.R. Robertson, and P.A. Wasney expire in 1991. M.G. Bassett volunteered to change to Advisory Member status. A.R. Robertson indicated his intention to resign as President, but was willing to stay on for one more year to allow the committee to plan for a smooth transition to a new president. J. Roberge indicated his willingness to stand for nomination as president in about one year. The committee agreed to have A.R. Robertson stay as president for one more year, and to consider a new president at the next annual meeting. B.W. Tansley proposed that we replace P.A. Wasney with S. Kaye of the University of Manitoba. The committee agreed. The NRC International Affairs had indicated that it wished to have more than one nomination for each position from which it could choose the committee member. As a result the committee suggested the following 12 people for six positions. Also indicated in the list is the CIE division of which that person is a member. The committee expressed a strong preference for the six people in the first column on the basis of their activity in the CIE.

W.K. Adrian
P.K. Kaiser (Div 1)
I.C. Pasini (Div 3)
J. Roberge (Div 5)
E. Wotton (Div 6)
J.C. Zwinkels (Div 2)

S. Kaye
K.F. Lin
J. Love
S.M. McFadden
R.A. Smith
D.K. Tiller

8. Melbourne Session:

The secretary reminded the committee that he had not yet received all the replies to the Central Bureau's questionnaire which he had mailed to all the attendees to Melbourne. The reply to the Central Bureau is due.

9. Other Business:

Two items of business were brought to the committee's attention:

1. The secretary brought forward an E-mail message (Appendix M) which he had received from T. Nilsson, who was unable to attend this meeting. Item 1 concerning financial information was taken under advisement by the secretary. To reduce the cost of coming to these meetings, several suggestions were offered: a) The meeting should be held on a Friday to enable the use of cheaper airfares. b) M.G. Bassett indicated that lower priced accommodation was available at the University of Toronto in Hart House. She would need reasonably early notice in order to make the reservations.

As a result, the committee decided on the date for **next year's annual meeting: 1992-November-13, Friday**, at the same location as this meeting.

There was a discussion concerning the method of dispersal of the limited amount of funding. The committee did not agree with items 2 and 3 of T. Nilsson's suggestions which dealt with a method of dispersal of the funds available. It was decided that if the total request for funding should exceed that available, the difference between the monies requested and the monies available would be divided equally between the parties requesting funding and subtracted equally from their requests, with the proviso that there will be no negative amounts, and using an iterative procedure if necessary.

2. E. Wotton raised the issue concerning the visibility of the CNC/CIE in Canada. He asked whether members of other related organisations (such as the various electric power suppliers, Ministry of Energy, Human Factors Association, etc.) could attend these meetings: the answer was - yes! He then suggested that we make available some information concerning ourselves to various Canadian journals in the fields related to our work. He offered to send the secretary a list of suitable journals and

their addresses. I.C. Pasini offered to send a copy of *LIGHTING*. R. Kaufmann offered to send information concerning the Human Factors journal, of which he is editor. B. Kolesnik also offered to send some journals.

10. Adjournment:

A.R. Robertson expressed the appreciation of everyone present to M.G. Bassett for hosting the meeting, and for baking the delicious desserts.

The meeting was adjourned at approximately 17:15.

A.A. Gaertner
Secretary, CNC/CIE
Institute for National Measurement Standards
National Research Council of Canada
Ottawa, Ontario K1A 0R6

APPENDIX A

ATTENDEES TO THE 36TH ANNUAL MEETING OF THE CNC/CIE

Marion G. Bassett	University of Toronto
Arnold A. Gaertner	National Research Council (INMS)
Ronald Gibbons	University of Waterloo
Peter K. Kaiser	York University
Roy Kaufmann	Defense and Civil Institute of Environmental Medicine
A. Ketvirtis	Fenco Engineering Inc.
Barbara Kolesnik	UMA Engineering Ltd.
K. Frank Lin	Lighting Sciences Canada Ltd.
J. Bruce McArthur	Atmospheric Environment Service
Ivan C. Pasini	Public Works Canada
Jacques Roberge	Infranor Canada Inc.
Alan R. Robertson	National Research Council (INMS)
Brian W. Tansley	Carleton University
Robert W. White	Environmental Lighting
Ernest Wotton	Lighting Consultant
Joanne C. Zwinkels	National Research Council (INMS)

Canadian National Committee of CIE

President's Report, 1991-11-28

A.R.Robertson
Institute for National Measurement Standards
National Research Council
Montreal Road
Ottawa, Ontario K1A 0R6

I was able to obtain a budget of $5000 from the NRC International Affairs Office to support travel to Australia for the 22nd Session of the CIE in July 1991. The budget was not restricted to Members of the CNC/CIE and could be used to support any Canadians active in the CIE and not employed by the federal government. In accordance with the decision made at the 1990-11-22 meeting of the CNC/CIE, I offered a budget of $2500 each to Dr.Werner Adrian and Dr.Brian Tansley.

In addition to the budget for the Australian meeting, NRC has allowed us a budget of $3000 for members to attend the CNC/CIE annual meeting.

In March 1991, I sent a letter of condolence on behalf of the CNC to the German National Committee following the death of their President, Dr.-Ing.J.Krochmann.

I attended the CIE Executive Committee meeting in Melbourne on 1991-07-02 and -06. Professor Marion Bassett attended the first day and Mr.Jacques Roberge the second day. An Executive Summary of the Minutes is attached. Full Minutes are available on request.

Following the recommendation of the CNC, the CIE has awarded certificates of appreciation to Mr.Antanas Ketvirtis and Dr.Leroy Sanders in recognition of their valuable service to the CIE over many years.

At a recent meeting, NRC's governing Council confirmed the appropriateness of NRC's role with respect to affiliations in science and engineering international organizations and endorsed that NRC must continue to be the adhering member for the majority of Canada's international affiliations in non-government science and engineering organizations and must seek a renewed commitment from the Government of Canada for an appropriate grants budget. A full text of the motion is available.

arr:ciecnc.r91

CIE

Executive Summary of the Executive Committee Meeting, Melbourne 2nd and 6th July 1991

A) Meeting on 2nd July 1991

1. Opening and announcements

The President opened the meeting on 2nd July at 11:00, called for a minute's silence to commemorate those who passed away during the past two years. The roll-call showed 25 member National Committees represented, before the election started this number rose to 30.

2. Approval of the Agenda

The Agenda was accepted without change.

3. Approval of the Minutes of the Meeting in Vienna, 1989.

The Minutes were approved without changes or amendments.

4-7. Reports by the President, Secretary, Vice President Technical and Vice President Publications

The Officers of the CIE read their reports (Annex 2 to 5 to the Minutes).

8. Discussion on the Reports

The discussions focused on the proper balance between the activities of the Commission to support research and develop standards. The next Board of Administration should foster both activities.

Also the results of the work of the Commission - the Publications - were discussed. National Committees should do more to distribute CIE knowledge in their countries.

9. Election of Officers

The President stated that Mr. Kossakowski has withdrawn his nomination for Secretary. The Executive Committee decided not to make an ad hoc nomination but asked possible unsuccessful candidates to run for another office. The EC also agreed to elect three Vice Presidents without portfolio.

The following persons were elected as CIE Officers:

President:	R.C. Aldworth, GB
VP Technical:	H. Löfberg, SE
VP Publications:	W. Julian, AU
VP without portfolio:	G. Chahparunians, SU
	J. Kaufman, US
	K. Narisada, JP
Treasurer:	K. Scott, GB
Secretary:	J. Bastie, FR

10. Invitation for CIE Session 1995

Three National Representatives extended invitations to

— Warsaw, Poland

— New Delhi, India

— Berlin, Germany

11. The meeting was closed at 15:00

B) Meeting on 6th July 1991

1. Opening of the Meeting, Changes to the Agenda and Participation

The meeting was opened at 9:00

The President stated that two further National Committees joined the meeting, bringing the total amount of votes to 32.

It has been agreed to discuss first item 13 of the Agenda and add two items under item 12. Finances: proposals by Germany and the USA on dues distribution.

13. New Statutes and By-Laws

The Secretary reported on the incorporation of comments received by National Committees into the Statutes Version B that has been put forward by the Board of Administration for adoption.

Discussion was conducted on a further German proposal on deleting the terms Treasurer and Secretary, calling them Vice Presidents and that all Vice Presidents should get definite jobs, and no person on Board should be permitted to serve longer than two Quadrennia in single function.

After lengtny discussion the Executive Committee adopted the June 1991 version of the Statutes and By-Laws with the only modification that Treasurer and Secretary should be permitted also only to serve for two Quadrennia.

12. Finances

The Treasurer gave his report (Annex 8 to the Minutes), and explained that in the amended version of the Budget a new line has been introduced for "Contract Editorial Services" and some minor changes made to increase service by Central Bureau for speedy production of Technical Reports. The increased expenses were balanced by higher interest and higher publication sales.

After some requests for explanations of the single budget lines the budget was adopted unanimously.

Two proposals for a new dues system were put forward (US proposal: Ann. 9, DE proposal: Ann. 10 to the Minutes). Although the EC felt that the dues distribution system should be reconsidered, none of the proposals got enough support to guide the Board in developing the draft of a new system.

15. Place of next Session

New Delhi, India was chosen by the EC for the site of the 23rd Session in 1995.

16. Time and Place of next EC meeting

The EC decided to couple its meeting to Lux Europa in Edinburgh, GB in 1993.

14. CIE Awards

The President read the citations for 17 Members who retired from active participation in CIE work.

17. Any other business

The Executive Secretary asked the help of the National Committees in producing an error-free Roster 1992.

The President thanked Mike Marsden and Hans-Henrik Björset who now retire from CIE Steering bodies for the service they have given to the Commission over many years.

18. Closing of the Meeting

The meeting was closed at 13:10.

The CIE General Assembly Meeting has been scheduled for

3rd and 4th April 1993
Edinburgh, UK

MOTION ADOPTED AT THE 323rd MEETING OF COUNCIL

SEPTEMBER 1991

Motion #10 (Agenda Item 9)

1. That Council confirm the appropriateness of NRC's role with respect to affiliations in science and engineering international organizations as it provides:

   - a para-governmental, arm's length, adhering organization which is policy-independent and sensitive to scientific strategic priorities in Canada;

   - a synergy with NRC's mandate and mission as approved by Council, even though the role is on behalf of the totality of the science and engineering community in Canada;

2. That Council endorse that NRC must:

   - continue to be the adhering member for the majority of Canada's international affiliations in non-governmental science and engineering organizations;

   - expand its coordinating activities within and among such affiliations, in order to maximize the benefits derived from these affiliations;

   - define, with the guidance of the Advisory Committee on International Science, Engineering and Technology (CISET), a detailed set of guiding principles for NRC's International Affairs section.

   - seek a renewed commitment from the Government of Canada for an appropriate grants budget for paying international affiliations dues. This commitment should allow for a long term stability in terms of number of affiliations and in terms of planning activities by the S&T community and NRC. This financial commitment should be associated with a commitment from NRC to implement management practices which ensure the effective operations of the mechanism.

3. That NRC seek a commitment from other interested agencies for the financial support of the activities of the Canadian National Committees of direct interest to them.

MOTION ADOPTÉE LORS DE LA 323e RÉUNION DU CONSEIL
LE 25 SEPTEMBRE 1991

Motion n° 10 (Article 9 de l'ordre du jour)

1. Il est proposé que le Conseil confirme l'adéquation du rôle du CNRC en ce qui concerne ses affiliations aux organismes d'ingénierie et scientifiques internationaux du fait qu'il constitue :

   - un organisme adhérent paragouvernemental sans liens de dépendance, autonome au plan des politiques et sensibilisé aux priorités scientifiques stratégiques du Canada;

   et qu'il réalise une synergie avec le mandat et la mission du CNRC approuvés par le Conseil, même s'il exerce ce rôle au nom de la totalité de la collectivité scientifique et de l'ingénierie canadienne;

2. Il est proposé que le Conseil approuve la proposition à l'effet que le CNRC:

   - maintienne son adhésion à la plupart des affiliations internationales du Canada aux organismes scientifiques et d'ingénierie non-gouvernementaux;

   - développe ses activités de coordination au sein et parmi de telles affiliations, de telle sorte à maximiser les bénéfices qu'il pourra en retirer;

   - définisse, en tenant compte des conseils du Comité sur la science, l'ingénierie et la technologie internationales (COSITI), une série détaillée de principes directeurs pour les Services de représentation internationale du CNRC.

   - sollicite un renouvellement d'engagement de la part du gouvernement canadien pour l'affectation d'un budget de subventions approprié destiné à couvrir les cotisations d'adhésion aux organismes internationaux. Cet engagement devrait permettre d'atteindre la stabilité pour le long terme en ce qui concerne le nombre d'affiliations et les activités de planification de la collectivité scientifique et technologique et du CNRC. Cet engagement financier devrait être assorti d'un engagement du CNRC de mettre en place des méthodes gestionnelles assurant le fonctionnement efficace du mécanisme.

3. sollicite un engagement des autres organismes concernés en faveur de l'appui financier des activités des comités nationaux canadiens qui les intéressent directement.

COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
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CNC/CIE SECRETARY'S REPORT TO THE 36TH ANNUAL MEETING

1991-NOVEMBER-28

During the period 1990-November-22 to 1991-November-27 the following were considered:

CIE 22nd SESSION - MELBOURNE 1991-JULY-2 to 11 :

A large portion of the CNC/CIE's activities this year have centered about our participation in the CIE's 22nd session in Melbourne, Australia. Nine of our members were able to attend: Prof. W. K. Adrian, Prof. M.G. Bassett, Dr. J.B. McArthur, Mr. I.C. Pasini, Mr. J. Roberge, Dr.A.R. Robertson, Dr. B.W. Tansley, Dr. D.K. Tiller, and Prof. R. Topalova. Three posters were presented:

W. Adrian and R. Topalova, *Transient Adaptation Process: A Model to Predict its Effect on Vision.*

I.C. Pasini and S. Selkowitz, *A Tool for Assessing the Impact of Daylighting in Commercial Office Buildings.*

D.K. Tiller, M.J. Ouellette, and I.C. Pasini, *A Method for Predicting the Economic Consequences of Changes in Visibility.*

As a follow-up to the Session, the CIE Board of Administration has sent us a questionnaire to obtain our evaluation of the Session to assist them in the planning of the next session. A copy has been mailed to all of the attendees, but I have received only 5 replies from which to make my report to the Central Bureau.

CIE MATTERS:

1. ROSTER: Starting with the January 1992 issue of the CIE Roster, the Roster will also be available on diskette as dBASE files together with the EXE programs to produce TXT files containing all the information found in the printed version. The ROSTER programs will be available for ATS 4950, with free updates for these programs for the 1991-1995 quadrennium. The dBASE files are available on a yearly subscription basis: ATS 890 per year for 1992 and 1993. I do not yet know exactly how and where these will be available in Canada. (91-Nov-27, 1 ATS costs $0.10310 CDN)

2. MAILINGS: Amongst others, the following CIE materials have been received and mailed to the membership as appropriate:

CIE NEWS #16, December, 1990
CIE NEWS #17, March 1991
CIE NEWS #18, June 1991
CIE NEWS #19, September 1991
CIE Press Releases:
CIE Publication No.87, 1990: *COLORIMETRY OF SELF-LUMINOUS DISPLAYS, A BIBLIOGRAPHY*
CIE Publication No.89, 1991: *TECHNICAL COLLECTION '90*
CIE Publication No.90, 1991: *SUNSCREEN TESTING (UV.B)*
A joint CIE-WMO (World Meteorological Organisation) international project to make measurements of daylight from sun and sky throughout the world.
The CIE plans to hold a seminar concerning 'Computer Programs for LIght and Lighting' in Vienna, from 5-9 October, 1992. Preliminary information and a call for papers has been mailed out to all.
A listing of the new CIE officers and administrative bodies as decided at the Melbourne session.

MEMBERSHIP/MAILING LIST:

In February our president, Dr. Alan Robertson, sent a questionnaire to some of our CNC/CIE Advisory members to determine if they were still interested in CIE matters. The following did not reply, and I recommend that we remove them from Advisory Member status:

1. Mr. A.W. Henschel	Schore Tilbe Henschel Irwin, Toronto
2. D. Moizer	Gananoque
3. Mr. T.C. Nutt	C.B.C. Engineering Headquarters, Montreal
4. Dr. H.F.L. Pinkney	NRC Institute for Aerospace Research, Ottawa

Also, I have received information that Mr. Paul Young (Vancouver) has left the country, and therefore I recommend that he be removed from Advisory Member status.

I have received requests that the following be added to our advisory members list:

Mr. Jacques Lacasse, TScA
Luxtec Ltée
445, ave St-Jean-Baptiste
Suite 206
Québec, Québec
G2E 5N7

Dr. J. Love
The University of Calgary
2500 University Drive, N.W.
Calgary, Alberta
T2N 1N4

Dr. R. Lakowski
Department of Psychology
University of British Columbia
V6T 1Y7

Dr. K. Frank Lin
General Manager
Lighting Sciences Canada Ltd.
440 Phillip St., Unit 19
Waterloo, Ontario
N2L 5R9

During the year, 4 general mailings have been sent to our complete mailing list. The mailings to the following people have been returned undelivered. These names will be deleted from the mailing list unless I am informed of their addresses and continued interest.

Mr. I. Davis	Moldcast Lighting, Dorval
Mr. W.M. Dillon	Shore Tilbe Henschel Irwin, Toronto
Mr. Chris Fox	Ottawa
Mr. A.W. Henschel	Shore Tilbe Henschel Irwin, Toronto
Mr. D. Hoogeveen	Saskatchewan Power Corporation, Regina
Dr. D.E. MacPherson	The Holophane Company Limited, Bramalea

I have also written to Mr. M.M. Discutneau (Quebec) at both of the addresses supplied to me by J. Roberge, and received no reply to my query concerning which address to use.

Respectfully submitted,

A.A. Gaertner
Secretary, CNC/CIE
Institute for National Measurement Standards
National Research Council of Canada
Ottawa, Ontario K1A 0R6

XXD

COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien

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CNC Treasurer/Member, Division 4
Departments of Psychology and
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Carleton University
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November 21, 1991

Annual Treasurer's Report:

The treasurer's Report is not ready as of this date. It will be forwarded to the Secretary for dissemination as soon as it is prepared. This should be complete within a few weeks.

COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
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November 21, 1991

Annual Activity Report: Canadian Publication Sales

Publication sales this year were down somewhat from last, possibly reflecting the present state of the Canadian economy. Nevertheless, at the quadrennial session in Melbourne I was gratified to learn that Canada ranked 4th in publication sales (up from 17th last quadrennium).

We are still in need of recommendations regarding which numbers would be recommended to sell in clusters for various interest groups such as architecture, road lighting, colorimetry, etc.

GST: CIE publications are not subject to GST charges, according to our financial office, since our total sales do not exceed the criterion level.

NEW CIE POLICIES re publication sales. In order to (apparently) save costs and minimize the carriage of old inventory, as of this year the CIE will not sell publications on consignment to the National Committees. Instead, the Central Bureau proposes to sell to us on a **standing order** basis. Consequently, National Committees to either pay for existing stock or return old stock to the Central Bureau. Thus, in future, we will receive materials but be obliged to pay for them upon receipt.

There is also now no' tiered' pricing system. We receive a 35% discount on the set price (set by the Central Bureau) in return forthe privilege of being able to sell these publications exclusively within Canada.

If this were not enough, the Central Bureau now wants their money in Austrian Schillings!

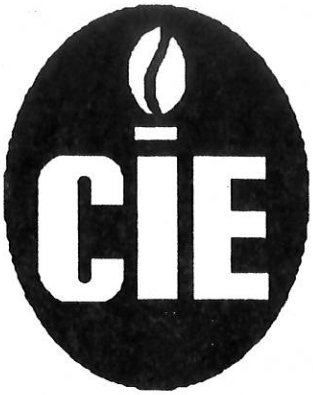
Our new ranking in sales notwithstanding: the amount of publication sales is not large and is spread out over the course of the whole year. Thus, much of the activity is done on a volunteer basis (since payment is minimal, based upon the hours worked.)

The effect of the "new system" has been to download more of the paperwork to the seller--i.e., the national committees. While I think that Canadians should have access to this material, it is becoming more and more difficult to manage the paperwork on a voluntary basis.

What to do? Sell more? Pay a student a "salary" independent of hour of work? Stop selling altogether and let Canadians buy from the Central Bureau? Discussion and recommendations, please!

I have appended the most recent publications catalog with this report. Further copies of this are available on request.

October, 1991



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
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INTERNATIONALE BELEUCHTUNGSKOMMISSION

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CIE Publication Catalog

Publication No.	Title	Price
1	Guidelines for minimizing urban sky glow near astronomical observatories (1980)	16.00
2.2	Colours of light signals , (2nd ed.) 1975.	29.00
8	Street Lighting and Accidents (1960)	24.00
12.2	Recommendations for the lighting of roads for motorized traffic, 2nd. ed. 1977.	52.00
13.2	Method of measuring and specifying colour rendering of light sources, 2nd ed. 1974.	54.00
15.2	Colorimetry, 2nd ed. 1986.	40.00
16	Daylight, 1970.	60.00
17.4	International Lighting Vocabulary, 4th ed. 1987	252.00
18.2	The basis of physical photometry, 2nd ed. 1983.	40.00
19.2	An analytic model for describing the influence of lighting parameters upon visual performance, 2nd ed. 1981:	
	- Vol.1 - Technical foundations,	62.00
	- Vol.2 - Summary and application guidelines.	42.00
20	Recommendations for the integrated irradiance and the spectral distribution of simulated solar radiation for testing purposes (1972)	47.00
22	Standardization of luminance distributions on clear skies, 1972.	36.00
23	International Recommendations for motorway lighting (1973)	55.00

24	Photometry of indoor type luminaires with tubular fluorescent lamps (1973)	60.00
25	Withdrawn, replaced by #84	
26	International recommendations for tunnel lighting (1973)	54.00
27	Photometry of luminaires for street lighting (1973)	62.00
28	Lighting of sports events for color TV broadcasting	29.00
29.2	Guide on interior lighting, 2nd ed. 1986.	55.00
30.2	Calculation and measurment of luminance and illuminance in road lighting, 2nd edition, 1982.	55.00
31	Glare and uniformity in road lighting installations, 1976.	24.00
32 A/B	Points speciaux en eclairage public, 1977. (A)	47.00
	Lighting in situations requiring special treatment (translation of 32 A without figures), 1977. (B)	
33 A/B	Depreciation et entretien des installations d'eclairage public, 1977. (A)	36.00
	Depreciation of installations and their maintenance (translation of 33 A without figures), 1977. (B)	
34	Road lighting lantern and installation data: photometrics, classification, and performance, 1977.	34.00
35	Withdrawn, replaced by #74	
37	Exterior lighting in the environment, 1976.	48.00
38	Radiometric and photometric characteristics of materials and their measurement, 1977.	47.00
39.2	Recommendations for surface colours for visual signalling, 2nd ed. 1983.	71.00
40	Calculations for interior lighting: Basic methods	55.00
41	Light as a true visual quantity: Principles of measurement, 1978.	35.00
42	Lighting for tennis, 1978.	20.00
43	Photometry of floodlights, 1979.	26.00
44	Absolute methods for reflection measurements, 1979.	60.00
45	Lighting for ice sports, 1979.	24.00
46	A review of publications on properties and reflection values of material reflection standards (1979)	90.00
47	Road lighting for wet conditions, 1979.	59.00
48	Light signals for road traffic control, 1980.	62.00
49	Guide on the emergency lighting of building interiors, 1981.	20.00
50	Proceedings of the CIE Session in Kyoto, 1979 (1979)	150.00

51	A method for assessing the quality of daylight simulators for colorimetry, 1981.	47.00
52	Calculations for interior lighting: applied method, 1982.	78.00
53	Methods of characterizing the performance of radiometers and photometers, 1982.	20.00
54	Retroreflection: Definition and measurement, 1982.	40.00
55	Discomfort glare in interior working environment, 1983	42.00
56	Proceedings of the Session in Amsterdam, 1983.	72.00
57	Lighting for football, 1983.	24.00
58	Lighting for sports halls, 1983.	16.00
59	Polarization: Definitions and nomenclature, instrument polarization, 1984.	40.00
60	Vision and visual display unit work station, 1984.	40.00
61	Tunnel entrance lighting: a survey of fundamentals for determining the luminance in the threshold zone, 1984.	62.00
62	Lighting for swimming pools, 1984.	24.00
63	The spectroradiometric measurement of light sources, 1984.	47.00
64	Determination of the spectral responsivity of optical radiation detectors, 1984.	52.00
65	Electrically calibrated thermal detectors of optical radiation (Absolute radiometers), 1985.	40.00
66	Road surfaces and lighting, 1984. (Joint technical report CIE/PIARC)	40.00
67	Guide for the photometric specification and measurement of sports lighting installations, 1986.	16.00
68	Guide to the lighting of exterior working areas, 1986.	40.00
69	Methods of characterizing illuminance meters and luminance meters, 1987.	40.00
70	The measument of absolute luminous intensity distributions, 1987.	40.00
71	Proceedings of the Session in Venice, 1987, Vol.1-2.	228.00
72	Guide to the properties and uses of retroreflectors at night, 1987.	52.00
73	Visual Aspects of Road Markings (joint technical report CIE/PIARC) 1988.	52.00
74	Roadsigns, 1988.	59.00
75	Spectral luminous efficiency functions based upon brightness matching for monochromatic point sources, 2 and 10 fields, 1988	30.00

76	Intercomparison on measurment of (total) spectral radiance factor of luminescent specimens (1988)	65.00
77	Electric light sources: State of the art - 1987 (1988)	112.00
78	Brightness luminance relations: Classified bibliography (1988)	152.00
79	A Guide for the Design of Road Traffic Lights (1988)	24.00
80	Spectral metamersim index: Change in observer (1989)	24.00
81	Mesopic photometry: History, special problems and practical solutions (1989)	31.00
83	Guide for the lighting of sports events for colour telelvision and film systems (1989)	16.00
82	History of the CIE	140.00
84	Measurement of luminous flux, 1989	47.00
85	Solar Spectral Irradiance, 1989	47.00
86	2^{o} Spectral Luminous Efficiency Function	20.00
87	Colorimetry of self-luminous displays - a bibliography	48.00
88	Guide for the lighting of road tunnels and underpasses	47.00
89	Technical Collection, 1990	15.00
90	Sunscreen Testing (UV.B)	15.00
	<u>CIE Standards:</u>	
S 001	Colorimetric Illuminants, 1986	16.00
S 002	Colorimetric Observers, 1986	31.00

28 November 1991

C.I.E. Division 7 - GENERAL ASPECTS OF LIGHTING

Report to the Canadian National Committee of the C.I.E.

Director: M. Seidl, Germany

Division Member: R.W. White
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Little information has been sent by the Committee chairmen regarding the activities of the TCs. Except for TC 7-05 - Lighting Education - there are no Canadian representatives to the TCs. Suggestions for Canadian representatives are most welcome.

TC 7-03 Developmemnt of Lighting - V. Dvoracek, Chairman; No Canadian Representative.
No information available.

TC 7-05 Lighting Education - G. Debreczeni, Chairman; R. White, Canadian representative
A final report titled "Lighting Education (1983-1988)" was sent by Prof. Debreczeni and is available on loan to any interested party. The 50 page report summarised the state of the lighting education in 18 CIE countries. In it's summary it said, "... present education.. provides unsuitable knowledge even for traditional designing (sic) requirements and still less compliance with the new requirements of lighting design..".

TC 7-06 Lighting Terminology - J. Bonhoure, Chairman; no Canadian representative.
Work is underway to prepare for the next edition of the International Lighting Vocabulary.

TC 7-08 Lighting Research Overview - R.L.Vincent, Chairman; no Canadian representative.
No information has been sent to this correspondent.

Other items of interest:

TC 7-02 - Light Sources and Control Gear - produced a new corrected version of the Light Source Data Table for use in CIE publications in September 1990.
At the Melbourne Conference, 2 papers were scheduled to deal with items in Division 7.

R. White

APPENDIX F

Division 6 : PHOTOBIOLOGY AND PHOTOCHEMISTRY.

Director Lucia R. Ronchi.

Div. 6 has the task to study and evaluate the effects of optical radiation, beyond those of vision, on biological and photochemical systems. The radiation spectrum of interest extends thus into the ultraviolet and the infrared.

The "path" followed by Div. 6 during the past two quadrennia, could be condensed in one sentence: Selection of effects of optical radiation on MAN, ANIMALS, MICRO-ORGANISMS, PLANTS, MATERIALS of interest for the lighting application.

The Div. 6 activity is of great importance and has increased very much throughout the quadrennium. The Director has been without the assistance of a Div. Secretary, while a Div. Editor has been assisting.

The activity has been covered by 20 TC's and 26 Reporters. Just a few of the TC's are, or will in the near future, be dissolved. Only three TC's are moderately active or non-active, while most of the others are very active. Also the great majority of the Reporters are very active.

The TC's and Reporters are covering many different topics. Only a few can be mentioned here:

TC 6-04 Selected photobiological information, has produced a report on definitions of the basic terms for use in other TC's and Divisions.

TC 6-10 Photobiological effects on human skin: A draft report "Reference action spectra for UV induced erythema and pigmentation for different human skin types" will soon be circulated to other experts for comments.

The report "Sunscreen testing (UV.B)" from TC 6-12 has been published as CIE No. 90 (1991). The report provide guide lines for sunscreen testing, offering to the user security and efficacy. Sunscreens are characterized essentially by the protection they offer against UV radiation from the sun and artificial sources. A new TC "Sunscreens and UV.A" has been established to study the UV.A human skin interactions.

A report "Biologically effective emissions and hazard potential of desk-top luminaires incorporating tungsten halogen lamps" (TC 6-18) has been through the Division and Council balloting. After some revision the report will be published.

To show the great span of items, titles of some TC's could just be mentioned:

TC 6-20: Photo-toxicity in domestic and industrial environment.

TC 6-21: Low-level UV.A cataract.

TC 6-23: Develop generalized action spectra for plant responses to waveband from 200 nm to 1100 nm.

TC 6-25: The conventional solar day weighted by UV action spectra.

Many of the Reporters have fulfilled their tasks during the quadrennium. Two of these reports are published in the Publication No. 89 CIE Technical Collection 1990:

* CIE Publ. 89/2: "Photobiological effects of sunlamps."

* CIE Publ. 89/3: "On the deterioration of exhibited museum objects by optical radiation."

A research note "Malignant melanoma and fluorescent lighting" was published in the CIE Journal, Vol.7 (1) 1988.

Many of the Reporters reports will be discussed at the Div. 6 meeting at the CIE Session 1991. The Division is also responsible for the Workshop "Directions for future psychobiological lighting research" on the 4th July.

During the quadrennium the Division held meeting every year; in 1988 in London, in 1989 in Vienna and in 1990 in Berlin. A limited meeting was held in Buenos Aires in 1989 on the occasion of the AIC meeting "Colour '89".

The Division has liaisons with Ass. Intern. Photobiol. (AIP), and TC's within IEC and ISO. Cooperation with other CIE Divisions and TC's is well established.

APPENDIX G

1. INTRODUCTION

The terms of reference of Division 5 are: "To study procedures and prepare guides for the lighting for exterior working areas, security lighting, floodlighting, pedestrian and other urban areas without motorised traffic, areas for sports (indoor and outdoor facilities) and recreation, and for mine lighting".
These terms embrace many different fields of specialisation within CIE. Examples of extremes of application now included in the working programme are:
Mine lighting (underground and open cast);
Architectural exterior lighting;
Exterior security lighting;
Sports lighting;
Restriction of light pollution.

The officers of Division 5 for the quadrennium 1987/1991 are:
Division Director: W.J.M. van Bommel (NL)
Division Secretary: P.C. Joye (CH)
Division Editor: R.A. Hargroves (GB).

The present Technical Committee structure is:
TC 5-01: Underground mine lighting
Chairman: R. Hemp (SA)
TC 5-02: Underground mine lighting measurements
Chairman: B. Weis
TC 5-03: Open cast mine lighting
Chairman: P.K. Bandyopadhyay (India)
TC 5-04: Glare in outdoor areas
Chairman: A. Stockmar (D)
TC 5-06: Decorative lighting for exteriors
Chairman: J. Prieur (FR)
TC 5-08: Lighting and signalling for off-shore gas and oil rigs
Chairman: to be appointed
TC 5-09: Illuminance levels for sports events
Chairman: T.M. Lemons (USA)
TC 5-10: Exterior security lighting
Chairman: P.C. Joye
TC 5-11: Practical design guidelines for sports lighting installations for CTV
Chairman: R.A. Hargroves
TC 5-12: Obtrusive light
Chairman: W.J. Julian (Australia).

2. MEETINGS

In 1989, Division 5 had a Meeting in Fribourg (Switzerland). Following the meeting, a one-day, joint CIE (Division 5) - SLG (Swiss Lighting Society) Symposium has been held in Fribourg. The topics dealt with at this symposium were chosen to represent Division 5 work either in its final stage or, contrary, right in its first phase.

Papers presented:
Architectural lighting (P.C. Joye);
Sports lighting for colour television (A. Kaufmann, J. Horvath, L. Di Fraia);
Outdoor glare evaluation (A. Stockmar);
Security lighting (P.R. Boyce);
Workshop on spill light (chaired by H.H. Bjorset with contributions of J. Assman, T, Shotbolt, D.A. Schreuder. E. Wittwer and J.F. Daams).

In 1990 the Division's meeting was in Oslo, Norway.

3. PROGRESS OF TECHNICAL WORK

Progress of the technical work has slow down a bit. The reason is probably twofold:
1. Because of a heavier workload in the day to day jobs of people, less time is available for voluntary CIE work. At the same moment companies, governments and universities are saving on travel expenses.
2. The chairmanship of the Division is spread over different continents (Asia, Australia, North America and Europe).

3.1 TC 5-01 UNDERGROUND MINE LIGHTING

In 1989 R. Hemp the successor of A. Peretiatkowicz as chairman of this committee chaired his first meeting. Before the meeting he prepared a new draft (following the 8th draft of former TC 4.10 on which work was stopped since some years). The Guide will now be based on illuminance values, this contrary to luminance values as proposed in earlier drafts. The chairman propeses a simplified method for glare restriction for this application field.

3.2 TC 5-02 MINE LIGHTING MEASUREMENTS

The report of this committee has been finalised, balloted upon and edited at the end of the last quadrennium. The report is waiting for being combined with the TC 5-01 report. It is published meanwhile in the 1990 CIE Collection.

3.3 TC 5-03 OPEN CAST MINE LIGHTING

Countries where open cast mining is important are widely spread over the globe. Contact has been made with some experts in different countries. An outline for a first draft report has been produced based on correspondence between experts from USA, Germany, China and India. Different open cast mining techniques in these countries have been evaluated as far as important for lighting. The wide spread of countries means that this committee mainly has to work by correspondence. The experience gathered by working in this way will be evaluated.

3.4 TC 5-04 GLARE IN OUTDOOR AREAS

The draft Report describing a glare rating and evaluation system for outdoor floodlighting installations is in a stage for balloting. The Glare Rating is a value between 0 and 100. The higher the value the greater the degree of glare obtained from a floodlighting installation. The Glare Rating GR can be calculated from the equivalent veiling luminance (Lvl) from the luminaires and the equivalent veiling luminance (Lve) from the lighted field:
$GR = 27 + 24 \log (Lvl/Lve^{0.9})$.
Lve can be approximated from the average field luminance:
$Lve = 0.035\ Lav$.
Practical tests on football stadiums, soccer training fields, tennis courts, aprons and a container harbour have now confirmed the practical possibilities. At the 1989 Fribourg Symposium examples of computer calculation possibilities have been demonstrated.

3.5 TC 5-05 LIGHTING OF SPORTS EVENTS FOR COLOUR TELEVISION

End 1989 the report of this TC has been published as CIE Publication No 83 "Guide for the lighting of sports events for colour television and film systems". The guide gives a short survey of those aspects of television and film cameras that relate to the lighting requirements to be fulfilled. Also the artistic possibilities of cameramen as related to the lighting are dealt with. The lighting requirements in terms of vertical and horizontal illuminance level and uniformity are given for three groups of sports and for three groups of pick up distances. The grouping of sports is based on the pick-up problem related to the kind of sport (distance, speed, apparent size etc.).

3.6 TC 5-06 Decorative lighting for exteriors

The " Guide for floodlighting and decorative lighting" has been finalised, balloted upon and edited. The report is being brought into the required CIE lay-out now and will be published this year. The report describes how to use exterior lighting "for the decoration of the nighttime urban landscape". The guide gives tools for the exterior lighting designer and ideas for the town architect. It also describes the possibilities of exterior urban beautification with energy friendly decorative lighting for decision makers.

3.7 TC 5-08 LIGHTING AND SIGNALLING FOR OFF-SHORE GAS AND OIL RIGS

Mr. van Malland, until 1990 chairman of this committee, has prepared an extensive outline for a report. It covers the lighting of areas on offshore installations like the exterior working areas, galleys, open decks, holds, alleyways, engine rooms, control rooms etc. Aspects such as power supply, ambient temperatures, vibrations, corrosion, safety, explosion proof etc. have to be dealt with.
Because Mr. van Malland could not carry on with his chairmanship the work has now temporarily been stopped. Contacts have been made with other experts in this field to try to hand over the chair and thus continuing the work.

3.8 TC 5-09 ILLUMINANCE LEVELS FOR SPORTS EVENTS

This TC has prepared a report giving an overview of different national recommendations for different kinds of sports for different purposes of use. Based on this report a set of tables will be produced specifying CIE recommended illuminance values for different types of sports, each for some different categories of use (e.g. recreation, training, club competition, professional competition). Division 5 has proposed to use this report as a direct basis for a joint ISO/CIE Standard.

3.9 TC 5-10 EXTERIOR SECURITY LIGHTING

The terms of reference of this committee are "Study and consider matters of exterior security lighting for private houses, residential areas, office buildings, banks, airports, prisons, exterior working areas, energy supply facilities, international boundaries, etc. as a deterrent to crime and to enable detection, as part of an integral security installation, with the intention of producing a guide". Work for drafting a first draft text has been started. The TC investigates the possibility to have the assistance of a student for condensing the huge amount of literature.

3.10 TC 5-11 PRACTICAL DESIGN GUIDELINES FOR SPORTS LIGHTING INSTALLATIONS FOR COLOUR TELEVISION

The guide being prepared by this TC will give practical advise on the realisation of the recommendations for sports lighting for colour television and filming laid down in CIE Publication No 83 (see Section 3.5). The practical guidance here will reflect the best of modern lighting design world-wide. The main body of the guide will be devoted to sections covering many individual sports where there may be colour television or film coverage under artificial lighting. Practical guidance is not only given on the lighting aspects itself, but also on electrical systems needed for the lighting, maintenance and on lamp and luminaire characteristics. A complete draft for discussion is expected to be available at the Melbourne CIE Session.

3.11 TC 5-12 OBTRUSIVE LIGHT

Based on the workshop on spill light at the Fribourg joint CIE/SLG Symposium in 1989 (see Section 2) this TC has been established. Its terms of reference are: "To study the effects of obtrusive light from exterior lighting to residents and traffic; and to prepare a Technical Report that gives measure(s) to describe the effect(s), restricting values for these measures, and measuring methods; excluding the problem for astronomers". (For the latter problem CIE Division 4 has established a Technical Committee). At the CIE Session in Melbourne another workshop will be organised on this subject. It is anticipated that this workshop will give further input for this TC.

3.12 RAILWAY LIGHTING

A liaison has been established with the ORE Working Party A 168.3 "Development of Railway Lighting". (ORE = Office de Recherche et d'Essais de l'Union Internationale des Chemins de Fer).
The most important task of this Working Party is expressed by its statement: "to design technically, economically and operationally optimum railway lighting systems, it is necessary to draw up technical specifications based on theoretical study, comprising both the technical characteristics and the options for implementing them".

4. ACKNOWLEDGEMENT

Without the time, energy, and especially the enthusiasm of many volunteers the work of Division 5 would never have progressed. When I name here the Division secretary and the Division editor, Philipe Joye and Bob Hargroves respectively, I am sure the other volunteers will fullheartedly agree. To avoid misunderstandings about the editing quality of our editor, this quadrennial report has not been edited!

Wout van Bommel, Eindhoven, 22 March 1991.

COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
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Canadian National Committee Comité National Canadien
CIE Liason: Visual Aids Panel of the
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November 21, 1991

Annual Activity Report: CIE Division 4

Division 4 of the CIE (Lighting for Signalling and Transportation) was very active this year. The annual meeting of the Division was held in conjunction with the quadrennial session of the CIE in Melbourne, Australia in early July.

Two documents were approved this year for publication by the CIE. These are:

Road Lighting as an Accident Countermeasure
and
Lighting of Urban areas

In addition, the technical report on the **Fundamentals of the Visual Task of Night Driving** is being prepared for voting this year.

I have included the Division 4 minutes along with ancillary materials. For further information on Division 4 work, please contact me at the above address.

ANNEX 2

DIVISION 4: LIGHTING & SIGNALLING FOR TRANSPORT
1987 - 1991 QUADRENNIAL REPORT

DIRECTOR: R W HOLMES

1. GENERAL

The terms of reference for Division 4 are:-

> To study lighting and visual signalling and information requirements of transport and traffic, such as road and vehicle lighting, delineation, signing and signalling. All types of public roads, road users, vehicles and visual aids for modes other than road transport are included.

Division 4 currently has 17 technical committees and 14 Reporters and has now produced or is working on technical reports covering most areas in the above terms of reference.

Since 1987 the following have been published

> Publication No.73 (1987) Guide to the Properties and Uses of Retro-reflectors at Night.
>
> Publication No.73 (1988) Visual Aspects of Road Markings.
>
> Publication No.74 (1988) Roadsigns.
>
> Publication No.79 (1988) A Guide for the Design of Road Traffic Lights.
>
> Publication No.26/2 (1990) Guide for the Lighting of Road Tunnels and Underpasses.

Two further reports will be published very soon.

> Guide to Lighting of Urban Areas.
>
> Road Lighting as a Night Time Accident Countermeasure.

Annual Division meetings were held in Trondheim (Norway 1988), Agno (Switzerland, 1989) and York (England 1990).

An international symposium on Tunnel Entrance Zone Lighting was held in association with the Agno meeting in 1989.

The new structure introduced in Amsterdam in 1983 is now running smoothly. The 'Reporter' function is particularly successful, 6 of them have developed into technical committees. The cross-fertilization of ideas and information between the various technical committees such vehicle lighting, road lighting, road markings etc is important and is progressing well.

2. TECHNICAL COMMITTEES FORMED PRIOR TO START OF THE QUADRENNIUM (1987)

(i) TC 4-07 DESIGN METHODS FOR ROAD LIGHTING

This technical committee is producing simplified methods for road lighting design. Despite the current availability of many computer software packages for this purpose it was felt that this work would be useful both for third world countries and for instruction purposes. A final draft will be available at Melbourne.

(ii) TC 4-09 FUNDAMENTALS OF THE VISUAL TASK FOR NIGHT DRIVING

This technical committee has reviewed the research available on the visual task of night driving and drawn conclusions about how road design can be improved for night-time conditions. The technical report will include chapters on the elements in the perceptual process of the visual tasks, how the driver acquires information from the roadway scheme, the required sight distances for performing the three major sub-tasks in driving, visibility models, and conclusions.

The TC has met annually and excellent progress has been made on probably the most difficult area of Division 4 activities. It is hoped that voting on the technical report will take place in 1991/2.

(iii) TC 4-10 AUTOMOBILE LIGHTING SYSTEMS

TC4-10 continues to meet in conjunction with GTB meetings. It has 6 active working groups: Quality of Cut-Off, Side Marker Materials, Light Distribution of Front Fog Lights, Optimum Light Distribution of Low Beam Headlights, Minimum Illumination around the Cut-Off, Optimum Light Distribution of Signalling Lights. A technical report on the 'Definition of the Cut-Off for Vehicle Headlights' is being produced and should be ready for voting soon.

(iv) TC 4-12 SOLID STATE SIGNALLING

This technical committee was formed to review solid state technology with the aim of producing a technical report or CIE Publication. Unfortunately, the TC has not met nor worked by correspondence. The Division is now reviewing whether to abandon this work.

(v) TC -13 DAYTIME RUNNING LIGHTS

Day-time Running Lights increase the visibility/ conspicuity of vehicles to other road users. TC 4-13 was set up to study various issues associated with 'Day-time Running Lights' and to specify their optical performance.

The issues to be reported upon are vehicle detection related to ambient illumination, landscape and background properties and the optical properties of vehicle lighting. The terms of reference for TC 4-13 include the production of a CIE/ISO Standard after the technical report is published in 1991.

3. TECHNICAL COMMITTEES FORMED AT VENICE SESSION MEETING IN 1987

(i) TC 4-14 COLOURS & LIGHT SIGNALS

This technical report will comprise a brief summary of the recommendations for the colours of signal lights and the extent to which international and national authorities have adopted CIE recommendations. The report will also include the empirical basis for the recommendations, a review of the literature and a discussion of colour recognition by colour defective observes and the factors which affect colour recognition. A comprehensive bibliography has been compiled.

(ii) TC 4-15 LIGHTING OF ROADS FOR MOTORIZED TRAFFIC

This technical committee was formed to review publication 12/2 and association documents with the object of identifying those parts which need revision. It is also to consider the recently developed techniques relating to visibility, glare and other lighting variables. The committee met at the CETE 'variable geometry installation' at Rouen in France to observe the practical implications of the concept of the use of visibility index in road lighting design. The terms of reference for this TC has now been extended to include the production of a CIE/ISO standard.

(iii) TC 4-16 THE TRANSFER OF PHOTOMETRIC DATA FOR ROAD LIGHTING

This technical committee is to make proposals to enable the transfer of photometric data from any laboratory in any country to a computer for use in a lighting application program originating in any country. The terms of reference were modified in the course of the work to include indoor as well as outdoor lighting. Excellent progress has been made and the final Photometric Format has now been produced and final voting will take place in 1991.

(iv) TC 4-17 VISUAL ASPECTS OF VARIABLE MESSAGE SIGNS

This technical committee is to report on the visual aspects of variable message signs where the characters comprise individual elements. The report considers the visual abilities of observers, the conspicuity, legibility and readability of the signs and compares light emitting and light reflecting signs. The applications, testing and evaluation of the signs are also described. Excellent progress has been made and it is anticipated that the report will be published in 1992.

(v) TC 4-18 CONSPICUITY OF OBJECTS IN COMPLEX BACKGROUNDS

This technical committee held its first meeting in Agno in 1989. The contents for the technical report were agreed and a first draft should be ready for discussion in Melbourne.

4. TECHNICAL COMMITTEES FORMED DURING 1988-91

(i) TC 4-19 ROAD VISIBILITY IN FOG

This is a very important subject in many countries because of the serious nature of multiple accidents on motorways in fog. A first draft of this technical report has been produced. Chapters are being written on light propagation in fog, models of visibility distance, effect of dense fog on the visual task of driving, road visibility measurements, fog formation and abatement, efficiency and limits of lighting and signalling and other practical issues.

(ii) TC 4-20 MAINTAINING NIGHT-TIME VISIBILITY OF RETROFLECTIVE ROAD SIGNS

This work is progressing well and the technical report will be published early in the next quadrennium. The report includes chapters on sign luminance and retroflectivity and visibility requirements, methods of measurement of retroreflectivity performance in practice, management systems and surveys of national practice regulations etc. Recommendations will be given for minimum maintained retroreflectivity levels.

(iii) TC 4-21 INTERFERENCE OF PUBLIC LIGHTING WITH ASTRONOMICAL OBSERVATIONS

This committee was set up jointly with the International Astronomical Union (IAU) and met for the first time at York in 1990. It's aim is to revise the existing CIE/IAU Publication 'Guide lines for minimising urban sky glow near astronomical observations 1980' and to prepare a framework for national or regional regulations for the reduction of interference by light. A second meeting was held with IAU in Washington in January 1991. Field test procedures are being prepared to asses the light pollution arising from individual lighting installations, to urban areas and industrial site. Vehicle Lights will be considered in addition to roadlighting etc.

(iv) TC 4-22 HIGH INTENSITY DISCHARGE (HID) HEADLIGHTS

This technical committee met for the first time in Hanover in October 1990 and is to investigate the effects of HID headlights on visual performance and comfort factors related to road traffic at night. Project teams have been set up on 'Colour and Contrast Aspects', Glare, Run-up, Left and Right Side Zone, Horizontal Aiming, Foreground and Side Lighting and Overhead Sign Lighting.

(v) TC 4-23 REQUIREMENTS FOR VEHICLE LIGHTING IN LIT STREETS

This technical committee was formed following the York 1990 meeting. The committee is to review the need for special town lighting for vehicles in lit streets and to define the requirements and make recommendations.

(vi) TC 4-24 CALCULATION AND MEASUREMENT OF TUNNEL LIGHTING QUALITY CRITERIA

This technical committee was set up in 1990 to define a method for the calculation and measurement of quality criteria for tunnel lighting.

(vii) TC 4-25 ROAD SURFACE REFLECTION CHARACTERISTICS

This technical committee was set up in 1990 to consider any outstanding road surface, reflection characteristics such as the principles for 'on site' measurements and the change of characteristics at large observations angles.

5. DIVISION MEETINGS

(i) DIVISION 4 MEETING HELD IN TRONDHEIM, NORWAY 27, 28 SEPTEMBER 1988

29 people attended the Division 4 meeting and 7 technical committees held meetings.

(ii) DIVISION 4 MEETING HELD IN AGNO, SWITZERLAND 16, 17 OCTOBER 1989

30 people attended the Division 4 meeting and 8 technical committees held meetings. A symposium was also held prior to the Division 4 meeting on the subject of 'Tunnel Entrance Zone Lighting'.

(iii) DIVISION 4 MEETING HELD IN YORK, ENGLAND 15, 17 OCTOBER 1990

49 people attended the Division 4 meetings and 8 technical committees held meetings.

6. REPORTERS

REPORTER	TITLE	STATUS
Dr A M Serres	Use of Flashing Lights in Transport	Ongoing
G.Fisher (Previously B.Cobbe)	Special Applications of Traffic Signals	On-Going
Dr W Kebschull	Road Surfaces	On-going
Prof.B.Cole	Adverse Effects of Complex Background	Converted to TC4-18
Dr D.Schreuder	Interference from Light with Astronomic Observations	Converted to TC4-21
M.Keck	Microcomputers for Lighting Design	Converted to TC4-16
H.Wottman	Retroreflective Sign Maintenance	Converted to TC4-20
Dr A M Serres	Road Markings	On-going
Dr K Rumar	Use of Ultraviolet Radiation to improve Night-time Visibility	On-going
A Reynolds	Requirements of Vehicle Front Lights in Lit Streets	Converted to TC4-23
W.Riemen-schneider	Tunnel Lighting	Converted to TC4-24
J.Cobb	Vehicle Rear Fog Lamps	On-going
P.Haultala	Road Lighting Accident Studies	On-going

Canadian National Committee of the CIE

36th Annual Meeting
9:30 am - 5:00 pm
Galbraith Building - University of Toronto

Division 3 Member's Report

Division 4 Member:
Mr. Ivaldo Pasini, P.Eng.
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The following summarizes the activities of Division 3 during the past year.
The annual meeting was held in conjenction with the quadriennial session of the CIE in Melbourne, Australia, during the period of July 9-12, 1991.

The minutes are attached for ready reference.

Issues of particular importance are as follows:

1. There will be a new secretary replacing Hans Allen Lofberg, Sweden.

2. Mrs P. Chauvel remains the Division Director.

3. Dr. Belinda Collins, USA has accepted the position of Editor.

4. Several new Technical Committees were proposed by the Division and the 7 approved by the CIE Board are listed in page 9 of the attached minutes. Canada is represented on 4 TC.

5. Several publications were discussed. Their status also appears in the attached minutes.

6. ISO, WMO, IEA and other international bodies have accepted the role of the CIE as the only international organization representing lighting. This will be reflected in an ever increased role of the CIE in the setting of international standards. Evidence of the importance of this newly acquired international image by the CIE can be found in the significant increased participation by member countries in the activities of TC's. Japain in particular appears to be poised for a major investment of human and financial resources.

7. The Division offered an afternoon workshop to elicit comments and suggestions from its members on furure directions and priorities to be followed. A draft report of the outcome is attached in Appendix 4 of the minutes.

8. Canadian participation on existing TC's is as follows:

TC 3-01 "Discomfort Glare from Small and Large Sources"
Dr. W. Adrian

TC 3-05 "Industrial Lighting and Safety at Work"
Mr. I. Pasini, advisory.

TC 3-07 "International Collaboration on Daylighting Availability Measurements". Dr. A. Mc Arthur.

TC 3-16 "Psychological Aspects of Lighting Review"
Dr. D. Tiller

Appendix 3

CIE ACTIVITY REPORT

DIVISION 3

"INTERIOR ENVIRONMENT AND LIGHTING DESIGN"

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ACTIVITY REPORT 90:2 AND 91:1

for the period

APRIL 1990 to JUNE 1991

An Activity Report 90:2 should have been prepared in December 1990 but the number of submissions made was very small. Accordingly, when further requests were made for submissions in 1991 it was for this combined Activity Report covering the period since the previous one and through to the end of the present Quadrennium.

Following on from its meeting in Budapest in October 1989, Division 3 agreed to meet again in Moscow, USSR in October 1990 in association with the International Daylight Conference. The Division is grateful to the Institute of Building Physics, Moscow, and to the National Committee on Illumination of the USSR for the arrangements made for accommodation and refreshments. A number of Technical Committee meetings were held, and not surprisingly, mainly in the daylighting fields. In addition, the opportunity was taken, because the International Daylight Conference was jointly sponsored by both CIB and CIE committees of the USSR, to hold a joint meeting between CIB and CIE representatives to discuss areas of research, principally daylighting, fenestration and buildings. Details of this meeting and other Technical Meetings are given below.

It is with a feeling of great loss and sadness that we record the death, on 27th January 1991, of *Professor Dr.-Ing. Jurgen Krochmann.* Everyone who knew him could not help but regard with admiration the bravery and courage of this great man, and the outstanding contribution and significance of his work as a teacher, researcher, administrator, company director, committee member, leader, colleague and most of all, friend. We shall miss him. (A CIE obituary is published elsewhere.)

Progress reports on Division 3 activities now follow:

Editor of Division 3

No replacement for *Mr Kit Cuttle* (formerly based in New Zealand) has been found, consequently some difficulties in progressing documents has arisen.

Joint ISO-CIE Standards

Professor Kunio Matsuura (Japan) has consulted with *Dr Richard Kittler* on the preparation of a draft standard, combining into one standard, the two already accepted international standard skies. The document is now in its third draft and will be discussed at the Division 3 meeting in Melbourne in July 1991.

Revision of Interior Lighting Guide: *Reporter (Mr Lou Bedocs)*

Following the stepping down of Mr Mark Wood-Robinson (UK) as reporter at the Budapest meeting in 1989, *Mr Lou Bedocs* (UK) was asked to conduct a survey of members' views on an ISO lighting standard and this report was received in Moscow. Subsequently two further responses from USSR and Germany to the questionnaire have been received. These also indicate support for the production of CIE/ISO standards and Guides. A final report is in the course of preparation and this will recommend the immediate setting up of a T.C. to draft a standard: "The framework for interior lighting design" and to consider the formation of other T.C.s to prepare lighting guides. These matters will be considered at the Division 3 meeting in Melbourne.

Stage and Studio Lighting: *Reporter (Mr K R Ackerman)*

Arrangements are now proceeding well for Showlight 93. The colloquium will be mounted in England at the National Museum of Photography, Film and Television in Bradford, Yorkshire from the 19th to the 21st April 1993. The format of the meeting is likely to be similar to its predecessors, i.e. there will be two days of lectures and discussion with a programme of visits to theatres, TV studios and to the Museum. Once again there will be a small equipment exhibition and the preliminary response from the entertainment lighting industry is encouraging.

This event is being organised on behalf of the CIE by the British panel on Stage and Studio Lighting with the help of Yorkshire Television. A Press release will be issued shortly and a letter to all CIE member countries inviting them to nominate a point of contact to encourage maximum international participation in the colloquium. An appeal for papers will be issued in Autumn 1991 and it is hoped that it will once again attract a truly international audience.

Guide on Daylighting of Building Interiors: *Professor Nancy R Ruck (Australia)*

A meeting of the Editorial committee was held in Berlin in October 1989 at the Symposium on "Daylight and Solar Radiation Measurement".

At the Berlin meeting it was resolved:

(i) that the Guide be published in its present form in one volume.

(ii) that individual sections be checked by members of the Committee and any amendments be sent to the Editor, Dr Nancy Ruck.

The editorial group had a final meeting in Moscow at the Division 3 meeting on October 8, 1990. It was agreed that after a final check the draft should be sent to the CIE Central Bureau for publication. It was also agreed that the Daylight Guide was not to be circulated for Division ballot as it had already been approved by a previous CIE organisation.

The required amendments have been carried out and the Guide in its final form forwarded to Dr Janos Schanda, CIE Central Bureau, Vienna in May 1991 for publication. The considerable support given to the editing of this document by Dr Richard Kittler and Mr H-A Lofberg is gratefully appreciated as is the work of all contributors.

Liaison with CIB: *Mr J Derrick Kendrick (Australia)*

A joint CIB/CIE International Daylight Conference organised by the Soviet National Committees of CIB and CIE was held in Moscow, USSR, in October 1990. This was a most successful conference and *Dr Alex Spiridonov*, member of Division 3, is to be congratulated for his efforts.

While in Moscow, opportunity was taken to hold a joint meeting of representatives of CIB and CIE to discuss proposals by CIB to undertake work in the area of daylighting of buildings. A free and frank discussion took place and it was agreed that CIB proposals should be discussed directly between Mme Chauvel (Director of Division 3) and Dr Szerman whose institute proposes working in this area. Since that meeting Dr Szerman has submitted proposals and these have been considered. A reply is being prepared by the Director of Division 3.

Liaison with ISO/TC 159/SC4/WG3 Ergonomics, Signs and Controls: *Professor H J Hentschel (Germany)*; also CEN/TC 169

In the early part of 1991 the draft of Part 6: "Environmental Requirements" of the document entitled "Ergonomic requirements for office work with visual display terminals (VDTs)" prepared by the above ISO Technical Committee was reviewed. Members of Division 3 were invited to comment on this draft (CD 9241 part 6) with its sections on lighting but only Dr Narisada from Japan responded. Some eleven pages of the draft were commented upon, including corrections of words and deletion and rewriting of some parts in order to make the draft conform to CIE vocabulary and accepted knowledge. One goal of the CIE contribution was "to unify the lighting definitions with the lighting standards of CIE, ISO and current use, the other (goal) was to avoid misunderstanding of the recommendations for lighting at VDTs, given to ergonomists". The edited draft was then sent to the British Secretary, Mr Crabbe, via the Secretary of CIE Division 3. This ISO draft was subsequently withdrawn because of the several comments and negative ballots giving similar comments. It is expected that a new draft will incorporate the amendments suggested.

The work in CEN/TC 169 continues. As a start point the CIE recommendations, Guides and Publications are widely used. Currently no draft has been completed for possible discussion in Melbourne. However, perhaps one might consider a range of related activities between CEN/TC 169 and CIE Division 3. At present the activities include WG1: Fundamentals (*A Slater, Great Britain*); WG2: Lighting of Work Places and Schools (*H J Hentschel, Germany*); and WG3: Emergency Lighting (- *Watts, Great Britain*). Other WG's are WG4: Sports Lighting; WG5: Streetlighting' WG6: Tunnel Lighting; and WG7: Photometric Data for Luminaires, which are not within the scope of CIE Division 3.

Liaison with International Union of Architects (UIA): *Professor J A M Bell (UK)*

The British contact for UIA in UK is Mr Ian Pritchard of the Royal Institution of British Architects (RIBA). From him it has been learned that the UIA committee which may have some relationship with lighting is that for "Energy", although the terms of reference are very wide. There is nothing further to report.

T.C. 301: Discomfort Glare from Small and Large Sources: *Dr H Einhorn (South Africa)*

A report on "Glare from Small Sources" was reported (November 1990) to have been submitted some time ago. The gist of the report was that glare from sources smaller than $3*10^{-4}$ Steradian, seen off the line of sight, depends on their intensity, not their luminance.

This can be allowed for by defining $L=3000\ I/R^2$ or by substituting $3000E^2_{eye}/P^2$ for L^2_{ps}/P^2.

For large sources: memoranda on glare from large sources were circulated to T.C. members. (In the meantime the T.C. 301 Chairman spent considerable time on work for T.C. 313 (Discomfort Glare) which was more urgent.) The suggestion made, for large sources, is to agree first on glare from an indirectly lit or luminous ceiling, and later (after T.C. 313 has ratified a method for 'normal' sources) to arrive at a formulation for large sources between normal ones and a luminous ceiling.

A simple proposal for the latter has been submitted to the T.C.: "Luminous ceilings and up-lighting should be limited to providing an illuminance level not exceeding 1000 lux (Higher task illuminances can be obtained by additional local lighting)". This limit is negotiable, and other limits can be added for different conditions. The work of T.C. 301 can not be completed until final decisions of T.C. 313 are known and a continuation of T.C. 301 is desirable.

Although Dr Einhorn will not be attending the Melbourne Session it is nevertheless hoped that a T.C. 301 meeting will be held to progress the work.

T.C. 304: Subjective Response to Lighting and Shading Control Systems: *Mr Terry McGowan (USA)*

Final editing and circulation have been completed on the report in preparation by this T.C. The T.C. has been successful in thoroughly reviewing, reporting and documenting the developments in lighting control systems and especially the technology of newer automatic control systems which have become available in recent years. Thanks are offered to the members of the T.C. for their hard and effective work.

As reported to Division 3 previously, there has been some difficulty in carrying out the "subjective response" portion of this T.C.'s assignment. Little work on human factors with respect to controls has been carried out and reported although T.C. members have been able to gather some limited information. This is a "state-of-the-art" part of the technology and it is perhaps premature to expect extensive data that can be incorporated into lighting practice at this time. Nevertheless, a bibliography of sources and references has been included as part of the report which will be presented at the Division 3 meeting in July in Melbourne.

With the presentation of the report, this T.C. expects to conclude its work and disband according to the Division directive agreed upon at the Venice meeting. The T.C. Chairman particularly wishes to thank those in Division 3 who have provided advice, information and support.

T.C. 305: Industrial Lighting and Safety at Work: *Professor H J Hentschel (Germany)*

The present status of work was reported at the Moscow meeting of Division 3.

The T.C. has issued two reports, one for publication as a "short report" of CIE, the other for national publication by bodies of occupational health for encouraging research into bad lighting as a cause of accidents. The CIE report has been revised by Mr Aldworth (V.P. Publications) and was submitted for editing work to Mr L Bedocs (UK) and Mr M Van Ooyen (Netherlands). Then, only balloting by the CIE Board is necessary before publication. Thus, the work of TC 305 is completed and the TC should be dissolved.

Future work in this field should be undertaken by a new T.C. as proposed at Moscow with Mr Ruschenschmidt proposed as Convenor. The terms of reference proposed are: "Research work and gathering information on accidents caused by bad lighting by means of the questionnaire published in the second report of CIE T.C. 305". The new T.C. should be confirmed at the Melbourne Session.

T.C. 306: Methods of Evaluating the Interior Visual Environment: *M J-L Richard (France)*

No report received.

T.C. 307: International Collaboration on Daylight Availability Measurements: *Mr J D Kendrick (Australia)*

The T.C. met, as planned, in Moscow, USSR in October 1990. Discussions centred on approval of the draft of the Guide to International Daylight Measurements and to a discussion, in particular on Cloud Cover Recording and Reporting. A reporting method proposed by Dr P Valko in which the sky hemisphere is divided into 24 zones was approved for inclusion in the present draft, but in view of the discussion it was decided to recommend that further study and report be undertaken. The T.C. members present, then approved the draft for publication. (Subsequently, in redrafting the guide to CIE format it was found to be necessary for the T.C. meeting in Melbourne to consider it further.)

Consideration was also given to equipment reports and Professor Jurgen Krochmann indicated that equipment was now available to scan the sky at 145 positions in 20 seconds. This is an incredible achievement compared to previously reported measuring times of 2 and 2-1/2 minutes, and PRC Krochmann were congratulated on their success and contribution to the work of the T.C. and the International Daylight Measurement Programme (IDMP).

Reports on participation hopes and aspirations and on equipment and financial successes in anticipation of the International Daylight Measurement Year (IDMY) set to commence in 1991 were received. Reports were given from Japan, USA, USSR, Canada, Australia, United Kingdom, Rhine Valley, France, Switzerland, Holland, Scandinavia and Portugal.

The T.C. then considered future questions including the monitoring of the IDMP and proposals for sub-committees on cloud and u.v. measurements were made. On advice from the Director of Division 3 the T.C. then considered terms of reference for a new T.C. which would take on these responsibilities and these terms were proposed at the Division 3 meeting in Moscow.

The T.C. also discussed its interaction with IEA Task Forces 17 and 12.

T.C. 309: Average Sky as a Standard: *Professor K Matsuura (Japan)*

This T.C. was formed at the CIE Amsterdam Session in 1983, and the aim of the committee was suggested in the minutes of Division 3 Cambridge meeting in April 1984 as follows. "The aim is not to make a list of various sky situations, but to try to develop as few as possible sky standards between the two already standardized: clear sky and overcast sky."

According to this suggestion the terms of reference of T.C. 309 were decided as, "to study standard reference skies between the two skies already standardised: clear sky and overcast sky, and to propose a method of composing average and mean skies."

However, because of insufficient data and lack of time, it became difficult to propose standard skies (i.e. standard intermediate skies) between the two already standardised skies by the time of the CIE Venice Session in 1987. Therefore, the purpose of T.C. 309 was changed to become the presentation of a technical paper which would review studies on various skies, specify reference skies, and propose a method of composing average sky and mean sky as an Appendix. The standardisation of reference skies between the two standard skies was to be left to a new technical committee, T.C. 315 (Standardisation of intermediate sky luminance), which was formed at the CIE Venice Session in June 1987 (see below).

The complete draft of the CIE T.C. 309 Technical Report, "Luminance Distributions of Various Reference Skies" was finished and approved by all members of T.C. 309 in 1988.

This draft was sent to the Editor, Mr Kit Cuttle and revised partly in 1989. Furthermore, in order to fit into the CIE Code of Procedure for Divisions and Technical Committees, Part II (1987) of the draft was again revised according to suggestions by Mr R Aldworth (Vice President Publications) and Mme P Chauvel, Director , made at Budapest, in October 1989.

This last document was completed as "The new 4th draft of the complete draft of T.C. 309 report", in November 1990. This last draft is to be circulated for voting to Division 3 members.

T.C. 310: Maintenance of Lighting Systems: *Mr L Bedocs (UK)*

Balloting of the sixth draft of "Maintenance of Indoor Lighting Systems" was completed by late April 1991. Voting from Division 3 and the CIE Board was favourable. Several useful comments were received, with extensive comments from USSR, which where appropriate are being incorporated into the "camera ready" draft. Publication is expected later in 1991. The content of this proposed guide is also being considered by the European committee for standards, CEN, for adoption.

It was agreed at the Moscow Division 3 meeting that the work on Maintenance of Outdoor Lighting Systems and also Maintenance of Windows should be passed to other Technical Committees and other CIE Divisions.

T.C. 311: Daylighting Calculation Methods: *Professor M Navvab (USA)*

This T.C. now has a new Chairman.

At the Moscow meeting, Division 3 members heard the letter of resignation from Dr Michael Seidl and gave consideration to the future of this T.C. Most members felt that its continuation was essential as an extension of the work of Professor Nancy Ruck's Editorial Committee on the "Guide to Daylighting of Building Interiors". *Professor Navvab* (USA) agreed to Chair the T.C. and to expedite the work. Reports from the T.C. indicate that a literature review is underway and that the structure of this supplement to the above Guide will be discussed at the Melbourne Session.

T.C. 312: The Optimisation of Daylight and Solar Radiation Data with Respect to Lighting; and in Association with Other Aspects of Building Performance: *Professor Nancy Ruck (Australia)*

An alternative title for this T.C. has been proposed: "Daylight and Solar Radiation Data for Building Performance".

The aim and objectives of this Committee are:

(i) to promote international enquiry on existing measured luminance, illuminance and radiation data distributions in different climate zones

(ii) to analyse these data as functions of quantities currently available at meteorological stations

(iii) to develop adequate methodologies for predicting (estimating) daylight illuminances and irradiances for regions or sites where such data are not available

(iv) In collaboration with T.C. 311, to produce the necessary input data of the daylit environment to optimise its application in building interiors, particularly in computer programs.

T.C. 3.12 has ten committee members: Dr S Aydinli (FRG), M Fontoynont (France), V M Gatov (USSR), J D Kendrick (Australia), Professor H Nakamura (Japan), Mr Nouwynck

(Belgium), Dr R Perez (USA), J. Pulpitlova (Czech and Slovak Republic), Dr P Valko (Switzerland) and Dr P Littlefair (England - corresponding member).

With respect to (i) - an enquiry into existing data, a questionnaire was sent out to all committee members with the request that the required information be forwarded to the Chairman by June 20th 1991 so that the material might be discussed at the T.C. 312 meeting in Melbourne on July 8th 1991. The data are to be evaluated in a format to be decided by the T.C. Committee at that meeting.

With respect to (ii) - an analysis of the data, a draft proposal has been written by R Kittler, S Hayman, W Julian and N Ruck on "Standard methods of analysis and formulae for International Daylight Measurement Year data evaluations". This proposal is relevant to the T.C. 312 work and will be included for discussion in the Agenda of the Melbourne meeting. A publication has also been produced by Dr Carruthers (Australia) and Dr Roy (Australia) on "An evaluation of formulae for solar declination and the equation of time" which will also be discussed at the meeting.

With respect to (iii) and (iv) - methodologies for prediction and input data for computer software, this work forms part of research currently funded by the Australian Government and being carried out by the Universities of New South Wales and Sydney in Australia.

The results from this work and relevant material from the Kittler and Carruthers reports will be included in the Technical report the contents of which will be discussed at the T.C. 312 technical meeting in Melbourne.

T.C. 313: CIE Discomfort Glare Evaluation System: *Mr K Poulton (Australia)*

1987-1989 Quadrennium Report

The Committee T.C. 313 was created at the Division 3 meeting at the 21st Session in Venice in August 1987, following the very successful Workshop on Discomfort Glare.

The Committee's Terms of Reference were:

> *To propose a practical glare evaluation system based on generally accepted parameters influencing discomfort glare.*

The Objectives were:

> To propose a practical glare evaluation system for the intended revision of the Guide on Interior Lighting.
>
> The glare evaluation system should take into account the parameters which are generally considered to have a substantial influence on discomfort glare.
>
> The aim will be to present a draft Technical Report to the Division at the mid-term meeting.

On several occasions during the quadrennium, the Committee has met both on a formal and informal basis.

On February 22nd, 1989, at a meeting in Londin, the Committee agreed on the structure for a glare evaluation system which was to be known as the Unified Glare Rating System or the UGR.

It was proposed that the UGR system would be based on a modified version of the Einhorn Formula, as published in the CIE Publication No. 55. It was further proposed that from this formula a tabular method and a set of luminance curves should be developed.

In November 1989 the first draft of a report which described these three parts of the system was circulated. In the period which followed, there was considerable correspondence between the members and several informal meetings were held to discuss the details of the two methods.

In April 1991, a second draft was circulated and it is proposed that this will be finalised at the Pre-Divisional Meetings which will be held during the first week of July, 1991, in Melbourne.

The draft commences with a vitally important history of the subject of glare, then presents the basic glare index formula and compares it with other formulae including the Einhorn formula. Then follows a details discussion of the parameter affecting glare index and the proposed glare index method is described. The final chapter deals with the derivation of unified glare rating curves and presents several sets of curves for different situations and discusses the application of the curves.

This T.C. was given a four-year term to resolve some very difficult problems and will meet in Melbourne to discuss the final draft. The T.C. will need to continue for a further short term in order to finalise the document.

T.C. 314: Three-Dimensional Forms of Illuminance: *Mr Kit Cuttle (formerly New Zealand, now USA)*

1987-1991 Quadrennium Report

The committee was proposed and approved at the 21st Session, Venice, 1987. At the time of the Venice Session the Chairman was on extended leave and did not return to his place of work, the Victoria University of Wellington, New Zealand, until late January, 1988. The first general committee letter sent out in March, 1988, explained the work of the committee and requested members to respond with references and sources of information. Several useful responses were received promptly, and a second general letter followed in June, 1988. By the end of that year 63 references had been received or accessed, including several substantial works.

The central problem is to identify the fundamental concepts. There are numerous inconsistencies in the terminologies used by different authors, and it often requires prolonged and careful study of a paper to decide how the basic concepts employed by the author relate to those defined elsewhere by another author. It became clear that the starting point for the committee's report must be to propose definitions and terms, and so provide a basis for consistency among future authors.

It was decided to start by producing a document describing fundamental concepts and their inter-relationships, and by proposing a terminology. This was developed into a paper, "The Light Field and the Illuminance Vector", which was presented at the First Pacific Basin Lighting Conference, held in Shanghai, P.R. China, in April, 1989. In June of that year the paper was sent to all members of the committee, with a third general committee letter requesting their comment. Several members responded with constructive suggestions.

In November 1989, temporary student assistance was obtained which enabled the development of a database. All references have been entered, with abstracts where available, and the database permits the inclusion of keywords to provide for a variety of search strategies.

The task of reviewing the accumulated references was formidable. At the Shanghai conference contact was made with Dr Michael Smith (USA) who expressed keen interest in the concepts described in the T.C. Chairman's paper and offered to assist with the reviewing task. He was co-opted onto the committee. In May 1990 copies of several substantial references were sent to him. However, the following month the T.C. Chairman announced his decision to leave New Zealand and to join the Lighting Research Center at Rensselaer Polytechnic Institute in the

USA. The intervening twelve months have been totally taken up with the T.C. Chairman closing down his teaching, research, consultancy practice and home in New Zealand, and establishing a new home and an equally new Master of Science in Lighting degree at Rensselaer. The only thing that has been done to further the work of the Technical Committee has been to contact Dr Smith, who confirms that he has made significant progress with the task that had been set him, and that he remains keen to continue with the work.

Now follows a personal statement by the T.C. Chairman: "Although I have no regrets concerning my recent decisions, my state of mobility during the four years of the committee's existence has substantially limited its achievements. I remain convinced that there is a worthwhile task to be performed, and I have every intention of continuing to pursue it as other pressures permit. I hope that the committee will be permitted to continue its work, and I will fully understand if it is decided to appoint a new chairman who will be better able to maintain steady progress. I regret that I am not able to be present at the Melbourne session, and that I have been unable to attend any of the Division 3 meetings since the Venice session."

The T.C. Chairman thanks his committee. It is observed that few changes have been made since the T.C. was formed, but the following have all contributed to the work when they have been : the late Prof Dr-Ing Jurgen Krochmann (Germany), J A Lynes (Great Britain), R H Simons (Great Britain), Dr Ir Johan van Kemenade (Netherlands), R S Yates (South Africa), Prof Yang Gong-Xia (P R China), Dr H Willey (New Zealand), Tomoaki Shikakura (Japan), Dr A Michael Smith (USA).

Thanks are also expressed to Jacques Lecocq (France) for contributing information, and to the Illuminating Engineering Society of New Zealand for contributing towards the cost of the database software.

T.C. 315: Standardisation of Intermediate Sky Luminance: *Professor K Matsuura (Japan)*

This T.C. was formed at the CIE Venice Session in June 1987.

In October 1989 a T.C. meeting was held in Budapest. At this meeting two important members, Dr R Kittler and Dr P Valko, gave lectures and suggestions for standardising the daylight climate. After discussion the chairman stated that it was not appropriate to quickly propose some standard or recommendation for the intermediate sky luminance in terms of the daylight climate state because we do not yet have sufficient measured data for the sky luminance distributions related to some climatic indices. Thus, it was necessary to wait until adequate data is obtained, and this is expected in some results from the International Daylight Measurement Year 1991 from T.C. 307.

The chairman has indicated that of course this T.C. would continue to investigate theoretically and empirically various kinds of sky luminance model and to compare them with available measurement results at any time. Therefore, this T.C. will remain a long-range committee, and available measured daylight data should be steadily collected.

T.C. 316: Psychological Aspects of Lighting: Review Committee: *Dr Belinda Collins (USA)*

No report received. It is known, however, that preparations are in hand for the CIE Melbourne Session Workshop on "Directions for Future Psychobiological Lighting Research" on 4 July 1991. It is known that the work of this T.C. relates to work in Division 6 such as T.C. 611 "Systemic Effects of Optical Radiation on the Human" (Chair: Dr G Brainard, USA). T.C. 617: "Spatial and Temporal Variability of Radiation Exposure and Human Behaviour" (Chair: Professor Lucia Ronchi: Italy) and T.C. 616: "The Psychobiological Effects of Lighting" (Chair: Dr Rikard Kuller, Sweden). The main function of the Workshop is therefore to attempt to define the field and to sub-divide the work.

T.C. 318: Rational Use of Solar Radiation in Designing Energy-Efficient Systems of Daylighting: *Dr A Spiridonov (USSR)*

No report received.

T.C. 319: Scale Model Photometry for Interior Lighting: *Professor M Navvab (USA)*

No report received but the terms of reference of this T.C, as previously reported, have been more precisely defined and the objectives of the T.C. clearly identified. The work of this T.C. has been described in papers to Daylighting Conferences in Berlin (1989) and Moscow (1990). A further presentation of the work of this T.C. will be made at the Melbourne Session.

T.C. 320: Lighting and Architecture (Germany)

As previously reported the original Chairman of this T.C. died not long after the T.C. was established at the Budapest Division meeting of October 1989. The T.C. has since been reestablished and is commencing its work.

Next Meeting of Division 3

The next meeting of *CIE Division 3: Interior Environment and Lighting Design* will be held in Melbourne, Victoria in the second week of the CIE 22nd Session on *Tuesday afternoon 9th July 1991* and *all day Wednesday 10th July 1991*. The meetings will be held at the World Congress Centre (WCC), Melbourne.

A special meeting arranged by the Vice President Technical, Mr Hans-Henrik Bjorset (Norway), is to be attended by T.C. Chairs from all CIE Divisions. The meeting is called for Monday morning 8th July 1991 at the WCC.

It is also known that Technical Committee meetings of Division 3 have been programmed for Monday afternoon 8th July 1991 and for Tuesday morning 9th July 1991. Other Technical Committees may meet at other times during the CIE 22nd Session. Please watch notice boards at the CIE 22nd Session for details of meetings and room allocations.

J D Kendrick
Associate Director of CIE Division 3

20 June 1991

CIE Division 2 (Physical Measurement of Light and Radiation)

Report to Canadian National Committee of CIE, 1991-11-28

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The most recent Activity Report of CIE Division 2, dated July 1991, is attached. It shows the new executive of the Division following the meetings in Melbourne. The new Division Director is Dr.Franz Hengstberger (South Africa) with Dr.Antoine Bittar (New Zealand) as Secretary.

I was able to attend most of the Division meeting in Melbourne and can supply more information on request.

Canadian participation in the work of the Division continues at a high level with the following members of Technical Committees. All are present or retired members of the staff of the NRC Institute for National Measurement Standards.

Division member:	Dr.A.R.Robertson
TC 2-05, Chairman:	Dr.A.R.Robertson
TC 2-16:	Dr.A.R.Robertson
TC 2-22:	Dr.A.A.Gaertner
TC 2-24:	Mr.W.Budde
TC 2-25:	Dr.A.R.Robertson
TC 2-28:	Dr.A.R.Robertson Dr.J.C.Zwinkels
TC 2-29:	Mr.W.Budde
TC 2-33:	Dr.A.R.Robertson

DIVISION 2 ACTIVITY REPORT

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July 1991

CONTENTS

This report covers the minutes of the Division 2 Meeting on 9 July 1991 (Mielenz presiding) and Division 2 New Officiers' Meeting on 10 July 1991 (Hengstberger presiding). Both meetings were held at the World Congress Centre in Melbourne, Australia.

Countries with voting Members present were: Australia, Canada, China, Finland, France, Germany, Hungary, Italy, Japan, New Zealand, South Africa, Spain, Sweden, Switzerland, UK, and USA. Twenty six TC Chairmen, TC Members and guests were also present.

I. ADMINISTRATIVE MATTERS

The Division 2 New Officers as well as the TC's and Reporters which they are coordinating are listed as follows:

Director: Hengstberger (SA) R2-11, R2-14

Associate Directors:

Goodman (UK)	TC2-04, TC2-16, TC2-17, TC2-21, TC2-24, TC2-28, TC2-29, TC2-31, TC2-34, R2-05, R2-10
Hsia (USA)	TC2-11, TC2-14, TC2-19, TC2-25, TC2-26, TC2-30, TC2-32, TC2-33, TC2-35, R2-03, R2-06, R2-08, R2-09, R2-12
Vandemeersch (Belgium)	TC2-10, TC2-22, TC2-23

Secretary: Bittar (New Zealand) R2-13

Editor: Moore (UK) TC2-01, TC2-03, TC2-05, TC2-12

II. TC MEETINGS HELD IN MELBOURNE, JULY 1991

4 July	TC2-28
8 July	TC2-21
11 July	TC2-17, TC2-29, TC2-32, and TC2-33

III. COMMITTEE WORK IN PROGRESS

CM: Chairman; AD: Associate Director; TR: Terms of Reference;
ST: Status; ML: Membership List; RP: Reporter;
DD: Division Director; DS: Division Secretary; DE: Division Editor

Technical Committees

2-01 Measurement of High-Pressure Mercury Vapor Lamps
CM: Poppe (Hungary) DE: Moore (UK)
ML: TC to be dissolved
TR: Complete the report on the international intercomparison of luminous flux measurements on high-pressure mercury vapor lamps.
ST: The draft report is ready for the Division 2 and CIE Council ballots. The report will be included in the CIE Collection.

2-03 LED Intercomparison
CM: Schanda (Hungary) DE: Moore (UK)
ML: Moore (UK), Muray (USA), Sauter (FRG)
TR: Conduct an international intercomparison of photometric measurements on light-emitting diodes.
ST: Division 2 approved the draft report. After the approval of the CIE Council, a short version of the report will be included in the CIE Collection.

2-04 Secondary Standard Sources
CM: Moore (UK) AD: Goodman (UK)
ML: Berry, deVeer, Gundlach (FRG), Key (UK), Schanda (Hungary)
TR: Produce a technical report on the selection and operation of stable secondary standard sources.
ST: The first draft will be completed by the end of 1991. This is to be published as a CIE Report.

2-05 Definitions of Distribution Temperature
CM: Robertson (Canada) DE: Moore (UK)
ML: Azaryonok (USSR), Geutler (FRG), Hengstberger (SA), Moore (UK), Saunders (USA), Watarai (Japan)
TR: Formulate precise, technically useful definitions of distribution temperature, ratio temperature, and related quantities, in anticipation of a later intercomparison of measurements.
ST: The third draft was approved by TC members at the Berlin September 1990 meeting. The draft report will be submitted for Division 2 and CIE Council ballots in July 1991. (For CIE Collection)

2-10 Photometry and Goniophotometry of Luminaires
CM: Vandermeersch (Belgium) AD: Vandermeersch (Belgium)
ML: Arai (Japan), Almassy (Hungary), Blochouse (Belgium), Cazabat (Argentina), Lewin (USA), Petrov, Price (USA), Procter (UK), Sconieczna (Poland), Soardo (Italy), Vermeulen (Netherlands)
TR: Prepare a report on the photometric characteristics of luminaires and their measurement.
ST: The draft report is almost ready for TC ballots.

2-11 Gonioreflectometry of Standard Materials
CM: Hsia (USA) AD: Hsia (USA)
ML: Berns (USA), Bittar (NZ), Erb (FRG), Jungmann (Argentina), Li, Z. (PRC), Mashkovskaya (USSR), Nanjo (Japan), Ohno (Japan), Rossi (Italy), Verrill (UK)
TR: Study gonioreflectometric properties of standard white reference materials, including measurements and survey of published data.
ST: The first draft will be sent to TC members in August 1991.

2-12 Photometry of Thermally Sensitive Lamps

CM: Vandermeersch (Belgium) DE: Moore (UK)

ML: Dissolved

TR: Prepare a joint report on the photometry of thermally sensitive lamps.

ST: A one-page summary report with references will be published in CIE News and Collection.

2-14 Measurement of Reflectance and Transmittance, including Turbid Media

CM: AD: Hsia (USA)

ML: Bianchini (Italy), Bostick (USA), Gundlach (FRG), Hisdal (Norway), Hsia (USA), Mashkovskaya (USSR), Morren (Belgium), Polato (Italy), Terstiege (FRG), Vaillant (France)

TR: Define the standard geometric conditions for the measurement of transmittance and reflectance (CIE Standard)

ST: A new TC Chairman will be appointed to finalize the work following the passing away of Professor J. Krochmann.

2-16 Characterization of the Performance of Tristimulus Colorimeters

CM: Gundlach (FRG) AD: Goodman (UK)

ML: Billmeyer (USA), Cogno, Fillinger (Hungary), Geutler (FRG), Hengstberger (SA), Krochmann (FRG), Matveer, McLaren, Moore (UK), Nanjo (Japan), Nielsen (Denmark), Robertson (Canada), Walker

TR: Complete the technical report on tristimulus colorimeters started by TC 2.2.

ST: The TC Chairman was given a deadline to circulate a second draft and receive comments by the next Division 2 Meeting (June 1992). If not, a new TC Chairman will be appointed.

2-17 Recommendation for Integrated Irradiance and Spectral Distribution of Simulated Solar Radiation

CM: Kok (SA) AD: Goodman (UK)

ML: Aydinli (FRG), Ingatyev (USSR), Justus (USA), Kaase (FRG), Kasten (FRG), Kockot (FRG), Moore (UK), Richmond (USA), Zerlaut (USA)

TR: Revise and update CIE Publication #20 (1972)

ST: A first draft of Part II on solar simulators was discussed at a TC meeting in Melbourne on 11 July 1991.

2-19 Measurement of the Spectral Coefficient of Retroreflection

CM: Johnson (USA) AD: Hsia (USA)

ML: Brekke (Norway), Fisher (USA), Hsia (USA), Hubert (France), Kurioka (Japan), Price (UK), Rendu (France), Rennilson (USA), Richey (FRG), Schreiber (FRG), Sugiyama (Japan), Terstiege (FRG), Vandermeersch (Belgium)

TR: Identify the critical measurement parameters, tolerances, and requirements for, and conduct an international intercomparison of, the spectral coefficient of retroreflection.

ST: Intercomparison is underway. TC will meet in Europe in the Fall of 1991.

2-21 Spectroradiometry of Flashing Lights

CM: Kondo (Japan) AD: Goodman (UK)

ML: Gavrilova (USSR), Goodman (UK), Gundlach (FRG), Lehman (UK), Luminello (USA), Sauter (FRG), Vitel (France), Wychorski (USA)

TR: Study and recommend methodology and apparatus for accurate radiometric measurements of flash radiation sources, both of short and long duration.

ST: The sixth draft was discussed on 8 July 1991 in Melbourne. The final draft will be prepared by the end of 1991.

2-22 Luminous Flux of High-Pressure Sodium Lamps

CM: Garzo (Hungary) AD: Vandermeersch (Belgium)

ML: Azaryonok (USSR), Bastie (France), Bertrand, Burghout (Netherlands), Chen (PRC), Foerste (FRG), Gaertner (Canada), Gale, Goodman (UK), Juan (Spain), Juntunen (Finland), Moore (UK), Otto, Roempler, Rossi (Italy), Steindl, van Dam,

TR: Conduct an intercomparison of luminous flux measurements on high-pressure sodium lamps.

ST: The intercomparison is underway.

2-23 Photometry of Street-Lighting Luminaries
CM: Vandermeersch (Belgium) AD: Vandermeersch (Belgium)
ML: Almasi (Hungary), Andras (Hungary), Arai (Japan), Blochouse (Belgium), Cazabat (Argentina), Cherouge (France), Collins (UK), Krochmann (FRG), Levin (USA), Petrov, Price (UK), Procter, Skonieczna (Poland), Soardo (Italy), Vermeulen (Netherlands)
TR: Prepare a technical report on the photometry of street lighting luminaries.
ST: Work will start when the report of TC2-10 is done.

2-24 Users Guide for the Selection of Illuminance and Luminance Meters
CM: Rattunde (FRG) AD: Goodman (UK)
ML: Budde (Canada), Burghout (Netherland), Corrons (Spain), Dezsi (Hungary), Goodman (UK), Hubert (France), Krochmann (FRG), Lewin (USA), Lozano (Argentina), Moore (UK), Ottosson (Sweden), Sauter (FRG),
TR: Prepare a users' guide for the selection and use of illuminance and luminance meters.
ST: The TC Chairman is given a deadline by the next Division 2 meeting (June 1992) to have a working plan and to complete the first draft. If not, a new chairman will be appointed.

2-25 Calibration Methods and Photoluminescent Standards for Total Radiance Factor Measurements
CM: Gundlach (FRG) AD: Hsia (USA)
ML: Erb (FRG), Griesser, Hsia (USA), Nayatani (Japan), Racz, Simon (USA), Verrill (UK)
TR: Prepare a CIE report on methods for measurements of total radiance factors of photoluminescent materials. Recommendations for realizing and calibrating photoluminescent standards by the one and two-monochromator methods will be included.
ST: The TC Chairman is given a deadline by the next Division 2 Meeting (June 1992) to produce a working plan and to assign tasks to TC members.

2-26 Measurement of Color of Self-Luminous Displays
CM: Berns (USA) AD: Hsia (USA)
ML: DeMarsh (USA), Gavanin (USSR), Gorzynski (USA), Krystek (FRG), LeGoff (France), Rich (USA), Rochow (FRG), Snyder (US)
TR: Formulate a guide to the various methods of measurement of the radiometric, photometric and colorimetric parameters (properties of color) of self-luminous displays.
ST: After a discussion of the proposed outline of the guide during a workshop session at the Melbourne conference, it was decided to add a chapter on the proper electronic setup of displays. Otherwise the outline was adopted and a first draft will be prepared on this basis.

2-28 Methods of Characterizing Spectrophotometers
CM: Verrill (UK) AD: Goodman (UK)
ML: Andor (Hungary), Bastie (France), Berns (USA), Eckerle (USA), McCamy (USA), Robertson (Canada), Vlasov (USSR)
TR: Write a CIE report on the characterization of spectrophotometers by means of reference materials and other methods, with particular reference to linearity, wavelength error, stray light, and integrating sphere errors.
ST: TC met in Melbourne on 4 July 1991. New chapters on Measurement Uncertainty and Polarization were received. The completed draft will be sent to manufacturers and users for comments.

2-29 Measurement of Detector Linearity
CM: Goodman (UK) AD: Goodman (UK)
ML: Bastie (France), Budde (Canada), Dezsi (Hungary), Mihailov (USSR), Mostl (FRG), Ohno (Japan), Parr (USA)
TR: Prepare a CIE guide on methods for the characterization of the linearity of detectors of optical radiation, including different principles by which the linearity of detectors can be determined and

causes of non-linear behavior, to aid users of optical radiation detectors in the selection and use of suitable devices for specific applications.

ST: This TC is to report on methods of determining non-linearity of detectors. A first draft was discussed at a TC meeting in Melbourne on 11 July 1991 .

2-30 Diode-Array Radiometry

CM: Wychorski (USA) AD: Hsia (USA)

ML: Abasari (Hungary), Goodman (UK), Jones (USA), Mihailov (USSR), Mizushima (Japan), Pfleger (Austria), Sauter (FRG)

TR: Prepare an annotated bibliography for the CIE Journal on diode array radiometry. Make appropriate recommendations for future work in diode radiometry.

ST: A third draft will be prepared by early October 1991. TC is to limit its bibliography to articles in the fields of Radiometry and Spectrometry. Efforts in 1992 will be devoted to review articles and to write a 50-word summary for each article.

2-31 Methods of Characterizing Actinic Radiometers

CM: AD: Goodman (UK)

ML: Bastie (France), Ferenczi (Hungary), Hughes (USA), Kaase (FRG), Kok (SA), McKinlay (UK), Pastiels (Belgium), Poppe (Hungary), Reiter (Austria), Sarytchev (USSR), Steck (FRG), Vaillant

TR: Prepare a CIE Standard on characterizing the performance of actinic radiometers.

ST: There is a draft report. Need a new TC Chairman. Possible candidate is Ferenczi (Hungary). Bittar (NZ) and Wilkinson (Australia) are willing to serve as new TC members.

2-32 Measuring Wet Retroreflectance of Horizontal Road Markings

CM: Dejaiffe (USA) AD: Hsia (USA)

ML: Johnson (USA), Lundquist (Sweden), Meseberg (FRG), Rennilson (USA), Schmidt-Claussen (FRG), Schreuder (Netherland), Serres (France)

TR: Prepare a guide for the methods of measuring coefficient of retroreflected luminance (specific luminance) of horizontal road markings under wet weather conditions.

ST: TC Chairman is prepared to write the first draft.

2-33 Re-formulation of CIE Standard Illuminants A and D_{65}

CM: Mielenz (USA) AD: Hsia (USA)

ML: Hsia (USA), Robertson (Canada), Verrill (UK), Terstiege (FRG)

TR: Re-write CIE Standard S001 in terms of thermodynamic temperatures, and in a manner such that the spectral distributions of the standard illuminants are preserved, but are independent of international temperature scales.

ST: TC met on 11 July 1991 in Melbourne. TC is ready to write the first draft. The scope may include other D sources.

2-34 LED Measurements

CM: Muray (USA) AD: Goodman (UK)

ML:

TR: Investigate and recommend standard LED measurement methods including parameters to be measured.

ST: Division 2 and the CIE Council approved to establish this new TC.

Reporters

R2-02 Xenon Flash Lamps
RP: Wychorski (USA)
ST: Dissolved.

R2-03 IR Reflectance
RP: Sheffer (Israel) AD: Hsia (USA)

ST: Reporter Sheffer may visit Hsia in August 1991. Hsia will report to Divison 2 on the status.

R2-05 Visual Gloss
RP: J. Taylor (UK) AD: Goodman (UK)
TR: Investigate need for a TC on the subject of gloss, perhaps with a revised term of reference.
ST: J. Taylor was appointed as the Reporter.

R2-06 Standardization of Measuring Geometry for the Colorimetry of Metallic Coatings
RP: McCamy (USA) AD: Hsia (USA)
TR: Advise and inform Divison 2 of work carried out by ASTM and DIN in this area and report progress at Division 2 meetings.

R2-07 Temperature Behaviour of Compact Luminous Lamps
RP: Kaase (FRG)
ST: This reporting activity was discontinued.

IV. NEW TC'S AND REPORTERS

The following new TC's and Reporters activities were approved by Division 2 Members.

TC-35 $V(\lambda)$ and $V'(\lambda)$ CIE Standards
CM: Mielenz (USA) AD: Hsia (USA)
ML: Robertson (Canada)
TR: Prepare a new CIE Standard on the present $V(\lambda)$ and $V'(\lambda)$ functions.
ST: The plan is to produce the first draft by 1992 Division 2 meeting and to complete the draft by 1993 Division 2 meeting.

R2-08 Detector Based Photometry
RP: Ohno (Japan) AD: Hsia (USA)
ML: Wychorski (USA), Parr (USA)
TR: Investigate detector-based methods of Photometry for providing improved traceability for industrial measurements and to report conclusions at 1992 Division meeting.

R2-09 Absolute Cryogenic Radiometers
RP: Parr (USA) AD: Hsia (USA)
ML: Hengstberger (SA),
TR: Advise Division 2 on the needs of industrial users of cryogenic absolute radiometers by 1992 Division meeting.

R2-10 Non-Selective Detector (Terminology)
RP: Nettleton (UK) or Moore (UK) AD: Goodman (UK)
TR: Define the terminology used to describe non-selective detector and to report to Division 2 at its 1992 meeting.

R2-11 Flare Photometry
RP: J. Godsiff (SA) DD: Hengstberger (SA)
TR: Investigate the need for a TC to specify the measuring conditions for the photometry and Colorimetry of flares.

R2-12 Revision of publication #54 (Retroreflection)
RP: Rennilson (USA) AD: Hsia (USA)
TR: Prepare an outline for the revision of CIE Publication #54 and to report the conclusions at the 1992 Division 2 Meeting (need to consult Division 4)

R2-13 Advice to Division 3 on IDMP
RP: Kendrick (Australia) DS: Bittar (New Zealand)
ML: Hengstberger (SA), Bittar (New Zealand)
TR: Advise Division 3 on calibration and test methods for the quality assurance programme required for the International Daylight Measurement Programme.

R2-14 Division 2 Standards
RP: Wychorski (USA) DD: Hengstberger (SA)
TR: Review existing Division 2 documents/publications for possible conversion into Standards and advise TC's involved in such conversions on appropriate procedures in close liaison with the CIE Central Bureau.

V. COUNTRY REPORTS.

Reports from Spain, Hungary, and Japan are attached herewith. Additional reports are welcome. A paper presented at the Melbourne Division 2 meeting by Li Zai-ging, China is also attached.

IV. DIVISION 2 ROSTER

Current rosters of CIE Division 2 Officers, Country Members, TC Chairmen, and Reporters are attached.

IIV. NEXT DIVISION 2 MEETING

The next Division 2 meeting will be held in Sopron, Hungary from 4-5 June 1992. It will follow an IMEKO meeting on photonic measurements from 1-3 June 1992.

Department of Psychology

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Encl

955 Ref

November 5, 1991

Report of Division 1: Vision & Colour
to the Annual Meeting of the CNC/CIE

The major event for Division 1 as with all divisions was the Quadrennial meeting in Australia. Unfortunately I was unable to attend this meeting. It is the first one I have missed since 1971.

Fortunately Dr. Robertson was in attendance and can answer any queries regarding Division 1's activities.

Attached please find the Division 1 roster which I have taken from the most recent issue of CIE NEWS.

I can report one bit of information. During the CIE Quadrennial, I was contacted to determine whether I would assume the chair of a Technical Committee whose charge it would be to determine the human spectral sensitivity into the infra-red. I declined the honor.

Respectfully submitted

P. K. Kaiser

Peter K. Kaiser

Division 1:
Vision & Colour

No.	Chairman	Title
1-09	D. Gundlach	Standard Sources for Colorimetry
1-13	M. R. Pointer	Colour Appearance Analysis
1-14	P.R. Boyce	Lighting Effects on Vision
1-16		Lighting Needs for the Partially Sighted
1-17	A. Korn	Contrast Metric of Visibility
1-18	J. J. Vos	Disability Glare
1-19		Specification of Visibility for Real Tasks
1-21	Ken Sagawa	Testing of Supplementary Systems of Photometry
1-23	P. Walraven	Visual Acuity
1-24	R. White	Field Trials of TV Illumination Consistency Index
1-25	J Perry	Fundamentals of Discomfort Glare
1-26	H. Yaguchi	Individual Variation of Heterochromatic Brightness Matching
1-27	P. J. Alessi	Specification of Colour Appearance for Reflective Media and Self-Luminous Display Comparisons
1-28	Klaus Witt	Parameters Affecting Colour Difference Evaluation
1-29	D. A. Alman	Industrial Color Difference Evaluation
1-30	Mitsuo Ikeda	Luminous Efficiency Functions
1-31	C. S. McCamy	Colour Notations and Colour Order Systems
1-32	Y. Nayatani	Prediction of Corresponding Colours
1-33	W. Walter	Colour Rendering
1-34	D.M.Fairchild	Testing Colour Appearance Models
1-35	St. J. Dain	Selection of Light Sources for Colour Vision Examination
1-36	F. Viénot	Fundamental Chromaticity Diagram with Physiologically Significant Axes

APPENDIX L

CNC/CIE MEMBERS (1991)

CNC/CIE			TERM (expiry)	CIE
President	A.R. Robertson	Ontario	1991–12–31	Exec.Com. Division 1 (Assoc.Dir.) Division 2
Vice–President	P.K. Kaiser	Ontario	1991–12–31	Exec.Com. Division 1
Past–President	M.G. Bassett	Ontario	1991–12–31	
Secretary	A.A. Gaertner	Ontario	1993–12–31	
Treasurer	B.W. Tansley	Ontario	1994–12–31	Division 4 (Editor)
	S. Mahanti	B.C.	1992–12–31	
	T. Nilsson	P.E.I.	1993–12–31	
	I.C. Pasini	Ontario	1991–12–31	Division 3
	J. Roberge	Québec	1991–12–31	Division 5 Finance Com.
	P.A. Wasney	Manitoba	1991–12–31	
	R.W. White	Québec	1992–12–31	Division 7

From: NRCNET::IN%"NILSSON%UPEI.CA@UNBMVS1.csd.unb.ca" "Thomy Nilsson" 27-NOV-
To: Arnold Gaertner <gaertner@NRCPHY.NRC.CA>
Subj:

Received: from unbmvs1.csd.unb.ca by NRCNET.NRC.CA; Wed, 27 Nov 91 10:57 EST
Received: from unbmvs1.csd.unb.ca by UNBMVS1.csd.unb.ca (IBM MVS SMTP V2R1)
with BSMTP id 7055; Wed, 27 Nov 91 11:56:06 ADT
Date: Wed, 27 Nov 91 11:55:35 AST
From: Thomy Nilsson <NILSSON%UPEI.CA@UNBMVS1.csd.unb.ca>
To: Arnold Gaertner <gaertner@NRCPHY.NRC.CA>
Message-id: <ID7055.D911127.T115535.NILSSON@UPEI.CA>
X-Envelope-to: gaertner@NRCPHY.NRC.CA

Your reply about travel funds came too late for me to cancel other pressing needs and commitments for today and Thursday. Also I would like more certain assurance that at least the airfare WILL be covered before spending close to $1000 of what otherwise comes out of pocket to attend.
I would like the CNC/CIE Committee to consider a motion to deal with travel costs to meetings in a less ambiguous manner: 1. Meeting is announced, the announcement should be accompaned by information about travel funds. 2. Travel funds should be committed on a first committment to come - first to be assurred of travel expenses basis. 3. Persons missing a meeting for lack of travel funds one year would have priority the subsequent year - provided they reply promptly. Please make this a motion on my behalf.
I don't mind paying incidental travel costs and meals to get the travel funds to cover more persons attending - the pleasure of meeting colleagues and offering some service more than compensates for that. I can even see paying some accommodation cost costs for the "fun" of coming to the metropolis, particularly to get some time at the U of T Libraries. But the airfare is prohibitive, and I have to ration what little university support might be available for a chance to attend a major science meeting with prsentation of a paper once year.

With regrets,
Thomy